CipherLab
User Guide

MIRROR VT Terminal Emulation

For 8 Series Mobile Computers:
8000 / 8300 / 8400 / 8500

DOC Version 2.27

CIPHERLAB

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RELEASE NOTES

Version	Date	Notes
2.27	Dec. 02, 2010	▸ New: System Requirements ▸ Modified: 3.5.3 Auto SignOn — Username and password limitation ▸ Modified: Appendix I — support Code 11 for Long Range Laser (8300 only) ▸ Modified: Appendix I~II — support Coop 25 for CCD/Laser (8000/8300/8400) ▸ Modified: Appendix III — add Continuous/Test/Alternate/Auto Off Mode and support Code 11 for Long Range Laser (8300 only) ▸ Modified: Appendix I~IV — add more GS1 DataBar symbologies
2.26	Jun. 14, 2010	▸ Modified: Introduction — Getting Started, remove icon for Insert/Replace ▸ Modified: Introduction — Special ESC Commands & Hardware Test, add two ESC commands ▸ Modified: Appendix II~IV — update default values ▸ Modified: Appendix V Function Key Mapping — removed
2.25	Feb. 09, 2010	▸ Modified: Appendix IV — Reader Settings Table
2.24	Feb. 08, 2010	▸ New: 2.1.4 Code ID ▸ Modified: 2.3.1 Input — add Check Code Length ▸ Modified: Chapter 3 Barcode screenshot updated ▸ Modified: Appendix I — support ISBT 128 for CCD/Laser ▸ Modified: Appendix II — support ISBT 128 for CCD/Laser ▸ Modified: Appendix II — support UPC-E1 for CCD/Laser ▸ New: Appendix II — Code ID Table ▸ New: Appendix III — Code ID Table ▸ New: Appendix IV — Code ID Table
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2.22	July 08, 2009	▸ New: support 8400 ▸ New: Features — support quick download by saving download properties to an initial file ▸ New: “Alternatives to Download Settings” section ▸ Modified: Special ESC Commands & Hardware Test — Buzzer Test ▸ Modified: Utilities Menu — remove “RF”

		▸ Modified: 1.6 Download & Baud Rate — remove "RF" ▸ Modified: 3.4.3 WPA Passphrase — supports WPA2-PSK for 8400 ▸ New: Appendix V Function Key Mapping ▸ Modified: remove Bluetooth-related descriptions (3560 phased out)
2.21	Mar. 03, 2009	▸ Modified: Getting Started – add hot keys F1, F2, F3 and F9 ▸ New: "Special ESC Commands & Hardware Test" section ▸ Modified: 2.3.2 Scanner – remove special ESC commands ▸ Modified: 2.5 Hardware Test – remove ▸ Modified: 4.1 Emulation Type – remove vt102, ANSI ▸ Modified: 4.4.3 Horizontal Steps — FN key combination on 8000 ▸ Modified: 4.4.5 Cursor Tracking — FN key combination on 8000 ▸ Modified: 4.5.2 Keypad Type – add 8300 Keypad Type ▸ Modified: Appendixes I~III — GS1-128 (EAN-128), GS1 DataBar Omnidirectional (RSS-14), GS1 DataBar Limited (RSS Limited), GS1 DataBar Expanded (RSS Expanded)
2.20	Jan. 16, 2009	Separate documentation of 5250 Emulator and VT Emulator ▸ Modified: System tab (1) remove Func Toggle to the Emulation tab (2) add Macro Frame ▸ Modified: Barcode tab (1) add LED Flashing to Advanced Settings ▸ Modified: Wireless LAN tab (1) change WPA Passphrase from 8~64 to 8~63 hex values (2) Resume Protection (removed) (3) Power Saving Mode (added) ▸ Modified: Emulation tab (1) add 8500 Keypad Type (2) support 8500 44-TE Key ▸ New: GPRS tab for 8500 only
2.10	July 17, 2008	New Word template applied ▸ New: 2.6 Hardware Test for buzzer and barcode reader ▸ Modified: Appendix II – support "Field Separator" setting for EAN-128 with CCD/Laser scan engine
2.00	Oct. 02, 2007	New Word template applied ▸ Merge documentation of 5250 Emulator and VT Emulator
1.11	June 12, 2006	Company name changed to CIPHERLAB CO., LTD. Since April 2006 ▸ Modified: for 8061/8071/8360/8370/8500

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INTRODUCTION

Seeing the need to combine wireless connectivity and telnet terminal emulation, MIRROR VT Emulator, also known as CipherNet-VT, is designed to provide telnet terminal emulation on the 8000/8300/8400/8500 Series Mobile Computers, which are capable of 802.11b/g or GPRS connectivity.

The software, consisting of CipherNet programs (.exe) and the associated runtime (.shx), is designed for the users to develop custom telnet sessions for the use with the terminal emulation runtime preloaded on the mobile computers, without spending time writing any program code. Each of the mobile computers is a telnet client that allows the user to connect to a host computer, such as an IBM AS/400 server, and make use of the applications running on it. Thus, the mobile computer works as an input device to a host computer, and the data collected or input will be sent back to the host computer. On the other hand, the mobile computer works as an output device as well because it can display data coming in from the host. Based on the nature that the screen size of the mobile computer is smaller than that of an actual terminal, CipherNet programs provide a number of unique features for reformatting host screens.

This manual serves to provide comprehensive understanding of MIRROR VT Emulator, and helps start a telnet session running host applications. We recommend that you read the document thoroughly before use and keep it at hand for quick reference.

Thank you for choosing CipherLab products!

SYSTEM REQUIREMENTS

To run the program, one of the Windows operating system is required:

- Windows 2000
- Windows XP
- Windows Vista
- Windows 7

FEATURES

- CipherNet-VT supports VT100 and VT220 terminal emulation
- Can automatically insert data into an input field in the host application via reading barcodes or RFID tags
- Easy cloning by saving user settings to a configuration file (.NET)
- Supports auto sign on, cursor tracking, etc.
- Supports key mapping
- Supports control for barcode reader as well as RFID reader
- Supports control for beeper and vibrator
- Provides font size options
- Supports host screen capture and reformatting (Activation key is required!)
- Supports quick download by saving download properties to an initial file

GETTING STARTED

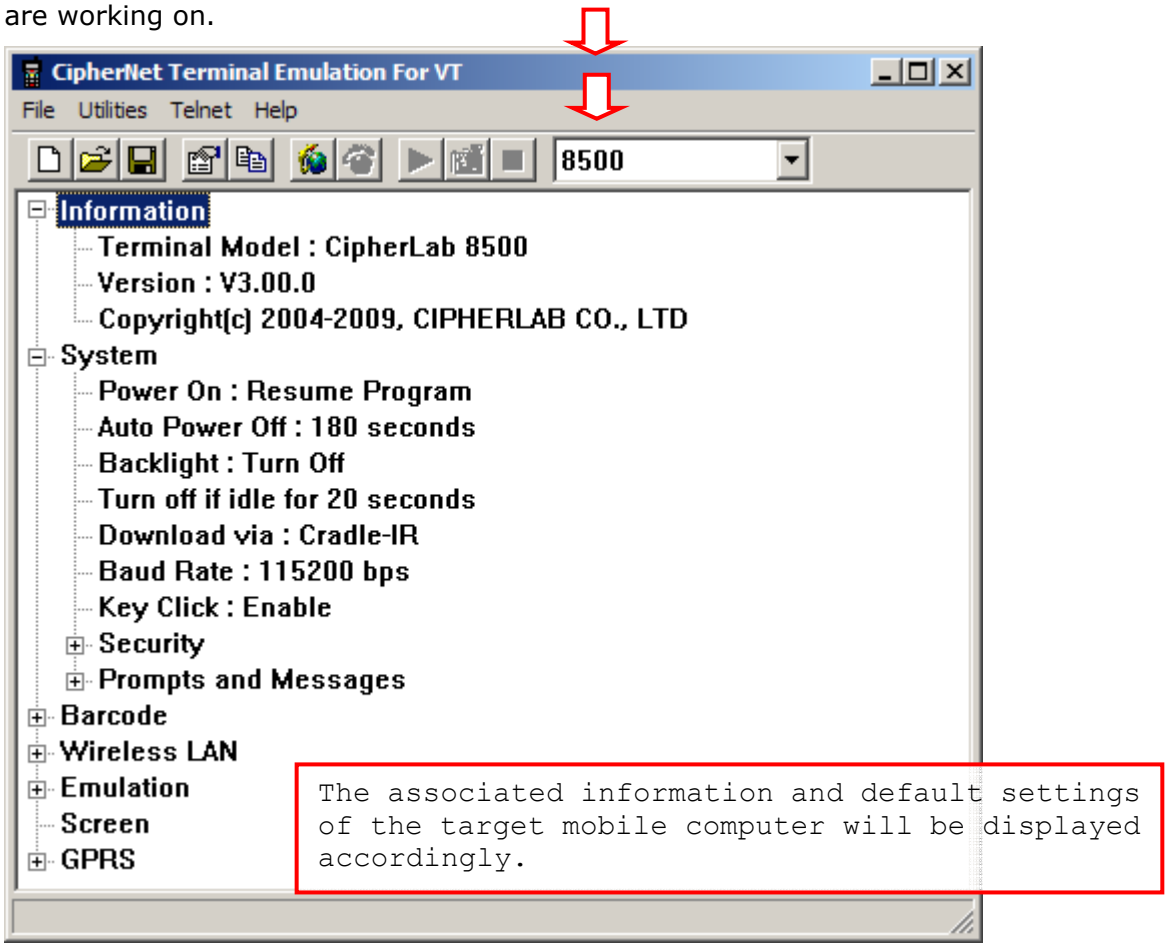
1) Run **CipherNet-VT.exe** from the Product CD.
2) Click **OK** to accept the End-User License Agreement (EULA).
3) Download the runtime program (.SHX) to the mobile computer via **Utilities Menu | Download Program**.

Associated Runtime Programs	
80xx-VT.SHX	: Download this program file to 8071.
83xx-VT.SHX	: Download this program file to 8330 or 8370.
84xx-VT.SHX	: Download this program file to 8400 or 8470.
85xx-VT.SHX	: Download this program file to 8500, 8570, 8580 or 8590.

On the mobile computer, press [7] + [9] + [Power] simultaneously to enter **System Menu | Load Program**.

4) Click the drop-down menu of

and select the mobile computer you are working on.



5) Configure the current user settings via **Utilities Menu | Configure**.

When you are editing an existing or new configuration file, the information and settings above will be updated accordingly.

6) Save the current user settings to a configuration file via **File Menu | Save**.

7) Download the configuration file (.NET) to the mobile computer via **Utilities Menu | Download Settings**.

   Refer to Alternatives to Download Settings.

8) From the **CipherNet Runtime Menu** on the mobile computer, select **1. Telnet** to start a fresh new telnet session after downloading.

   The mobile computer will be associated with an access point and connected to a host. During the telnet session, you will be able to make use of the host applications after login. To exit the telnet session, press **ESC** and **FN** simultaneously after logging out properly.

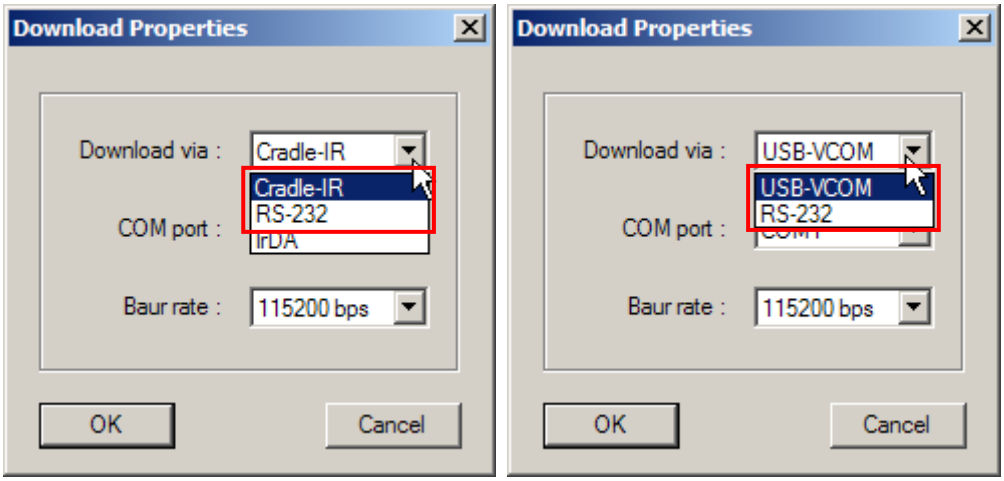
   - Understanding the Status Icons

     On the terminal screen, a number of status icons will be displayed on the bottom line.

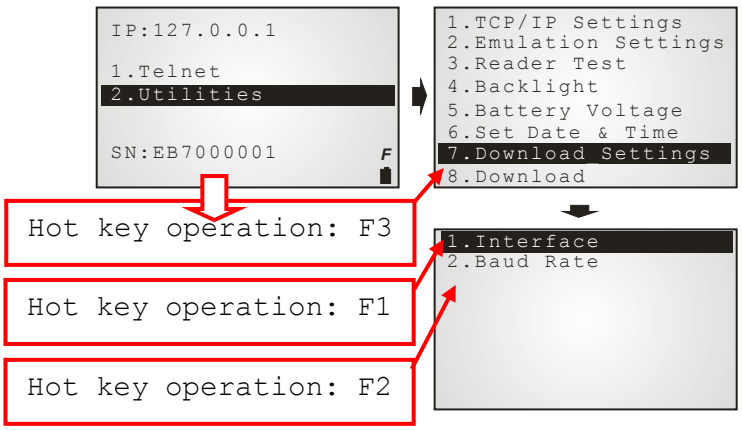
Icon	Remark
Special Key	For 8500 Series, individual icons for **Shift**, **Alt** and **FN** indicate a specific key is pressed.
Navigator	A graphic icon to indicate the relationship between the terminal screen and the host screen. Refer to 4 Emulation Settings.
Reader	Refer to 2.1 Barcode Reader. ▸ An empty box indicates both readers are disabled. ▸ A barcode icon indicates only the barcode is enabled. ▸ A cross-out barcode icon indicates both the barcode and RFID readers are enabled. ▸ A flash icon indicates only the RFID reader is enabled.
Antenna	An antenna icon indicates the RF signal strength.
Battery	A battery icon indicates the battery strength.

ALTERNATIVES TO DOWNLOAD SETTINGS

Auto-Detect & Download via Cradle-IR, RS-232 or USB Virtual COM



Seat the mobile computer in the cradle or connect it with the RS-232/USB cable to PC. Select to download settings via Cradle-IR, RS-232 or USB Virtual COM. When the mobile computer is turned on, it will start to download terminal emulation settings right with the **CipherNet Runtime Menu** as long as the current settings on the mobile computer are matching. Otherwise, you must configure the settings on the mobile computer accordingly.

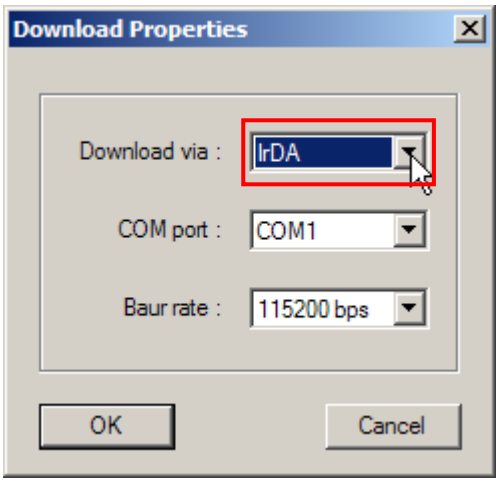


- From the **CipherNet Runtime Menu** on the mobile computer, press **F1** directly to enter the following submenu and select the matching download interface: **2. Utilities Menu | 7. Download Settings | 1. Interface**
- From the **CipherNet Runtime Menu** on the mobile computer, press **F2** directly to enter the following submenu and select the matching baud rate setting: **2. Utilities Menu | 7. Download Settings | 2. Baud Rate**
- From the **CipherNet Runtime Menu** on the mobile computer, press **F3** directly to enter the following submenu and start to download: **2. Utilities Menu | 8. Download**

  Take the 44-key 8500 mobile computer for example. You need to press **FN** to enable the function key, and then press the key for red-coded **F1**, **F2** or **F3**.

Note: You may press **F9** from the **CipherNet Runtime Menu** to view the current program version. Press the **ESC** key to cancel the hot key (F1~F3, F9) operation and return to the **CipherNet Runtime Menu**.

Download via IrDA

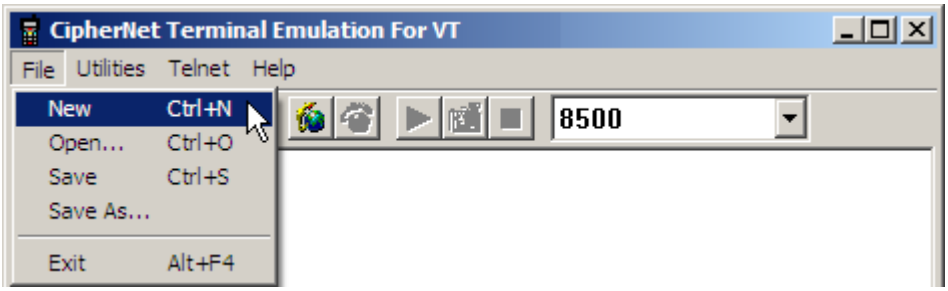


Pointed the IrDA port on the mobile computer directly to the infrared port of another IR device, and select to download settings via IrDA. When the mobile computer is turned on, you must press **F3** directly to start to download terminal emulation settings right with the **CipherNet Runtime Menu** as long as the current interface setting on the mobile computer is IrDA. Otherwise, you must press **F1** to change the interface on the mobile computer to IrDA first.

WORKING WITH MENUS & TOOLBAR

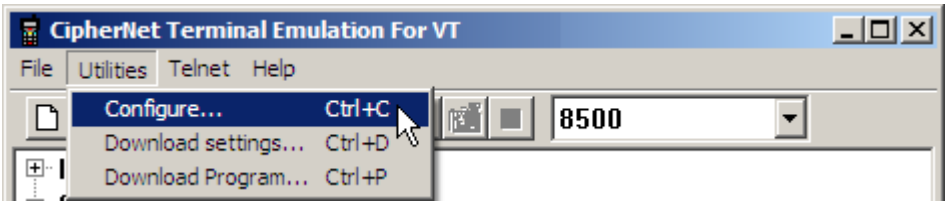
The menu bar contains a number of menus that specify which task you want the system to perform. Each menu contains a list of commands.

FILE MENU



Command	Action...
New	To create a new configuration file for the telnet client. Refer to each chapter.
Open	To open an existing configuration file. File path needs to be specified.
Save	To save the current settings to a configuration file (.NET).
Save As	To save the current settings to a new file.
Exit	To close the application.

UTILITIES MENU

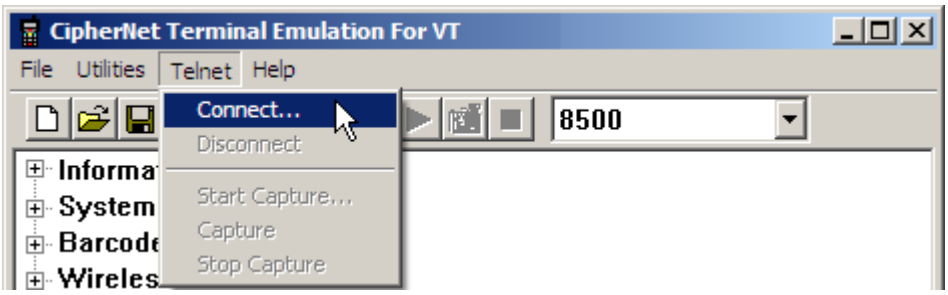


Command	Action...
Configure	To configure the current user settings. Refer to each chapter. ▸ System Settings ▸ Barcode Settings ▸ Wireless LAN Settings ▸ Emulation Settings ▸ Screen Settings ▸ GPRS Settings
Download Settings	To download the current configuration file (.NET) to the target mobile computer. ▸ If "Download via USB VCOM" is selected, skip baud rate settings.

- The download properties will be saved to an initial file automatically.

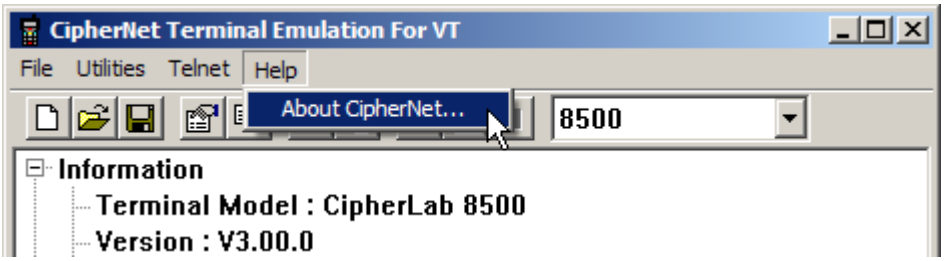
Download Program	To download the runtime program (.SHX) to the target mobile computer.

TELNET MENU



Command	Action...
Connect	To connect to a host.
	- Click "Save Log" if necessary.
Disconnect	To disconnect with the host.
Start Capture	To start the Capture task with a file (.SCR) for saving host session screens.
Capture	To capture the current host session screen.
Stop Capture	To stop the Capture task and close the .SCR file.

HELP MENU



Command	Action...
About CipherNet	To show version information about CipherNet and End-User License Agreement.
	- Version information is also available from the tree view.

TOOLBAR

The toolbar allows quick access to commands that are available in the current stage.

From left to right, they stand for the following commands:

	File Menu | New
	File Menu | Open
	File Menu | Save
	Utilities Menu | Configure
	Utilities Menu | Download Settings
	Telnet Menu | Connect
	Telnet Menu | Disconnect
	Telnet Menu | Start Capture
	Telnet Menu | Capture
	Telnet Menu | Stop Capture
	Select Product

SPECIAL ESC COMMANDS & HARDWARE TEST

SPECIAL ESC COMMANDS

For VT emulation, a number of special ESC commands are available for system information and hardware control. You may send an escape sequence from a host to get device type, serial number, or control the hardware features of the mobile computer.

<table>
<tr><th>Feature</th><th>Special ESC Command</th><th>Supported on</th></tr>
<tr><td>System Information</td><td>ESC[97c
▸ The mobile computer will respond with the information on H/W, S/N, M/D, KNL, LIB, USR and DEV. Each is separated by a comma.</td><td>8000/8300/8400/ 8500</td></tr>
<tr><td>Device Type</td><td>Get device type: ESC[98c
▸ The return value will be ESC[8>'Device Type'\0, such as [8>8300.</td><td>8000/8300/ 8400/8500</td></tr>
<tr><td>Serial Number</td><td>Get serial number: ESC[99c
▸ The return value will be ESC[9>'Serial Number'\0, such as [8>EB7000001.</td><td>8000/8300/ 8400/8500</td></tr>
<tr><td>LED</td><td>ESC[0;color;mode;duration]
<table>
<tr><th>Parameter</th><th>Description</th></tr>
<tr><td>color</td><td>0: Red LED
1: Green LED</td></tr>
<tr><td>mode & duration</td><td>0: LED is turned off for (duration *0.01) seconds and then turned on
1: LED is turned on for (duration *0.01) seconds and then turned off
2: LED flashes for (duration *0.01) seconds and then repeat</td></tr>
</table></td><td>8000/8300/ 8400/8500</td></tr>
<tr><td>Buzzer</td><td>ESC[1;beep sequence]
For example, you may send "ESC[1;x;y;x;y…]".
▸ A beep sequence refers to pairs of Beep Frequency(x) and Beep Duration(y).
▸ Beep Frequency = 76000 Hz / Actual Frequency Desired: if a frequency of 4 KHz is desired, the value of x is 19.
▸ Beep Duration is in units of 10 milliseconds.</td><td>8000/8300/ 8400/8500</td></tr>
<tr><td>Reader</td><td>Enable: ESC[2;1]
Disable: ESC[2;0]</td><td>8000/8300/ 8400/8500</td></tr>
<tr><td>RFID Reader</td><td>Enable: ESC[3;1]
Disable: ESC[3;0]</td><td>8300/8500</td></tr>
</table>

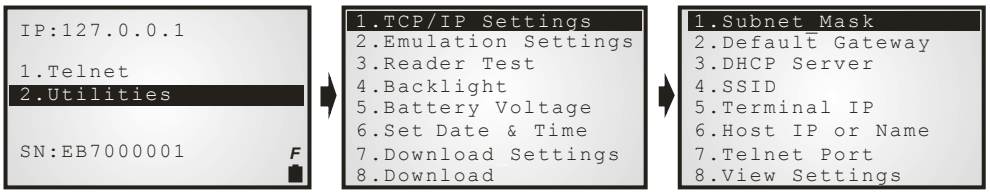
Vibrator	`ESC[4;duration]` ▸ The vibrator will work for (duration *0.1) seconds.	8300/8400/ 8500
System Time	`ESC[5;YYYYMMDDhhmmss]` ▸ The mobile computer will reset date and time.	8000/8300/8400/ 8500

BUZZER TEST

You can test the buzzer by playing a beep sequence.

1) Turn on the mobile computer. The main menu created by the preloaded **CipherNet Runtime** appears.

2) On the mobile computer, select **2. Utilities | 1. TCP / IP Settings**.



3) In this submenu, press the following key combination to enter the buzzer test:

- **F10** on 8400/8500
- **FN + 0** on 8000/8300

Take the 44-key 8500 mobile computer for example. You need to press **FN** to enable the function key, and then press the key for red-coded **F10**.

4) Enter a desired beep sequence or sequences, and then press **Enter** to play it.

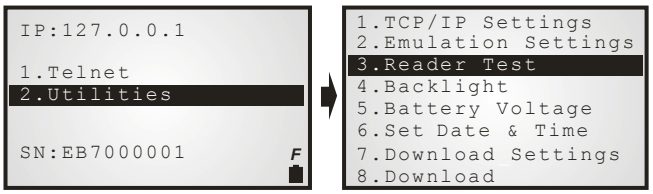
A beep sequence is a pair of frequency-duration, each 2-digit, such as 1520.

READER TEST

You can test the barcode reader by scanning barcode labels.

1) Turn on the mobile computer. The main menu created by the preloaded **CipherNet Runtime** appears.

2) On the mobile computer, select **2. Utilities | 3. Reader Test**.



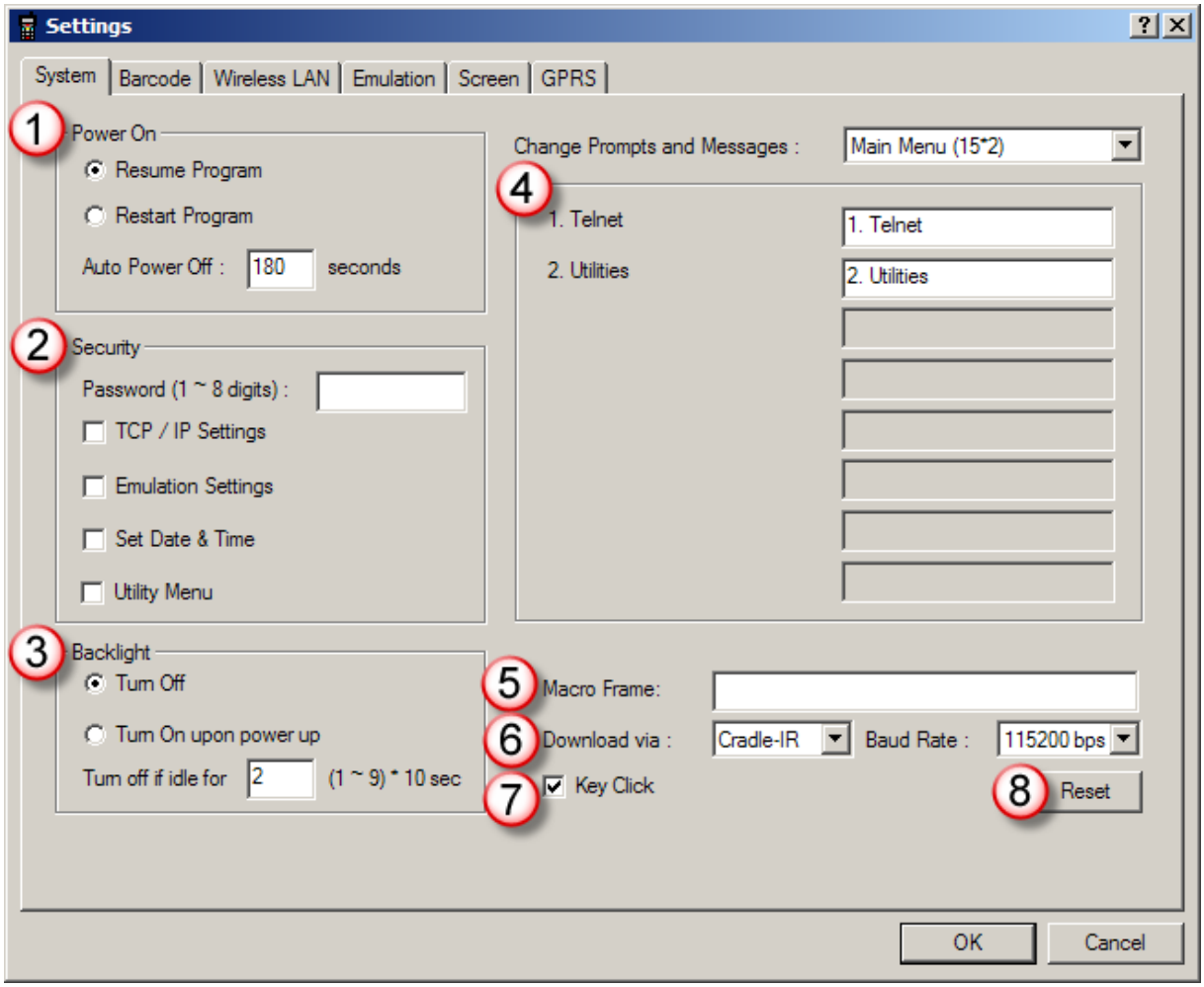
3) Start to scan barcode labels.

Along with the read data or error message on the terminal screen, there will be a beep to indicate Good Read or Error.

Chapter 1

SYSTEM SETTINGS

On this property page, system settings of the mobile computer can be changed.



Once the configuration file (.NET) has been downloaded to the mobile computer, the new settings will take effect immediately and become the defaults. However, you still can change many of the settings directly on the mobile computer via **CipherNet Runtime Menu** or **System Menu**:

CipherNet Runtime Menu — Press the Power key on the mobile computer.	
Backlight	CipherNet Runtime Menu | 2. Utilities | 4. Backlight
Baud Rate	CipherNet Runtime Menu | 2. Utilities | 7. Download Settings | 1. Interface 2. Baud Rate
Download via	CipherNet Runtime Menu | 2. Utilities | 8. Download

System Menu – Press 7, 9 and the Power key simultaneously on the mobile computer.	
Backlight	System Menu | 2. Settings | 2. Backlight Period
Power On	System Menu | 2. Settings | 3. Auto Off
	System Menu | 2. Settings | 4. Power On Options
Key Click	System Menu | 2. Settings | 5. Key Click

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1.1 POWER ON

1.1.1 RESUME PROGRAM

By default, the mobile computer will start from the latest telnet session at the time it is turned off.

1.1.2 RESTART PROGRAM

If selected, the mobile computer will start from the **CipherNet Runtime Menu**.

1.1.3 AUTO POWER OFF

By default, the mobile computer will be automatically turned off when no operation is taking place within 180 seconds.

1.2 SECURITY

For security concerns, you may specify a password and select the check box of one or more tasks that need security checking. By default, no password is required for any task. If any task is selected and provided with a password, you will not be allowed to enter an associated menu on the mobile computer without the password. This can prevent unauthorized users from changing the application settings.

- A password can be up to 8 alphanumeric characters.

Note: The password is case-sensitive.

Security Option	Remark
TCP / IP Settings	If selected and provided with a password, you will not be allowed to enter the following menu on the mobile computer unless the correct password is entered: **CipherNet Runtime Menu | 2. Utilities | 1. TCP/IP Settings**
Emulation Settings	If selected and provided with a password, you will not be allowed to enter the following menu on the mobile computer unless the correct password is entered: **CipherNet Runtime Menu | 2. Utilities | 2. Emulation Settings**
Set Date & Time	If selected and provided with a password, you will not be allowed to enter the following menu on the mobile computer unless the correct password is entered: **CipherNet Runtime Menu | 2. Utilities | 6. Set Date & Time**
Utilities Menu	If selected and provided with a password, you will not be allowed to enter the following menu on the mobile computer unless the correct password is entered: **CipherNet Runtime Menu | 2. Utilities**

1.3 BACKLIGHT

By default, the backlight for the LCD and the keypad of the mobile computer is turned off.

- When the backlight is turned on, you may specify a period of idle time so that it can be automatically turned off. Such time-out is specified in the range of 1~9, in units of 10 seconds. The default time-out is 20 seconds.

1.4 CHANGE PROMPTS & MESSAGES

Re-define the prompts and messages, if necessary.

1) Click the drop-down menu to select among the groups of prompts and messages. Modify them within a maximum length of 15 or 20 characters, depending on the screen size; otherwise, they will be automatically truncated.
2) Save the current user settings to a configuration file via **File Menu | Save**.
3) Download the configuration file (.NET) to the mobile computer via **Utilities Menu | Download Settings**.

   From the **CipherNet Runtime Menu** on the mobile computer, select **2. Utilities | 8. Download**.

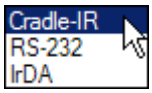
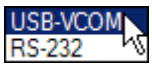
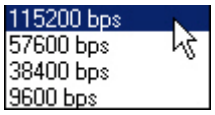
Note: CipherNet-VT does not support multiple languages; however, you may still choose to apply a large or small font size.

1.5 MACRO FRAME

Specify a macro frame if necessary. When starting a telnet session, the mobile computer will send a string of characters upon request from the server.

1.6 DOWNLOAD & BAUD RATE

Click the drop-down menu to select a desired communications setting for the mobile computer to download the runtime and configuration file (*.NET).

Download Option		Remark
Download via	8000/8300/8500:  8400: 	If **USB-VCOM** is selected, it is not necessary to configure the Baud Rate settings.
Baud Rate		By default, the baud rate setting is 115200 bps. However, it will be ignored by **USB-VCOM**.

1.7 KEY CLICK

By default, the mobile computer will produce an audible signal when you press any key on the keypad, except for the **SCAN** key. Cancel the check box if such feedback is not desired.

1.8 RESET

Click **Reset** to load the default settings.

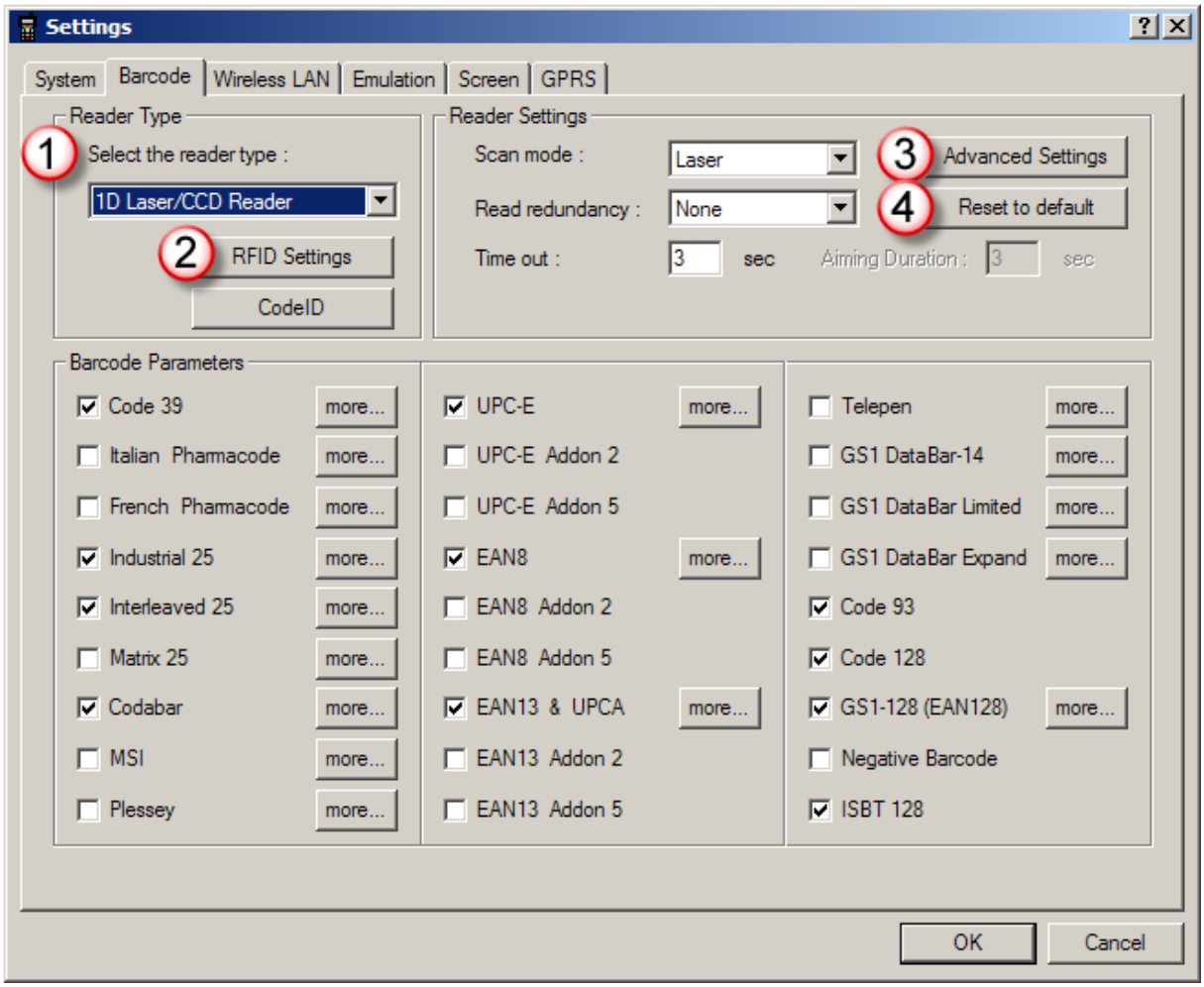
Note: The current system settings will be cleared.

Chapter 2

BARCODE SETTINGS

According to the requirements of a specific application, you may enable or disable any of the barcode symbologies and configure its associated parameters.

Supported barcodes depend on the scan engine integrated on the mobile computer.



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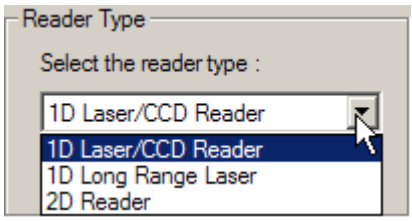
2.1 BARCODE READER

2.1.1 SELECT READER TYPE

Select a reader type that matches the hardware configuration of your mobile computer. The associated barcode reader settings, as well as the barcode parameters (= symbology settings) will be displayed accordingly.



For more information, refer to the following appendixes:

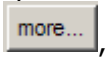
- Appendix I – Scan Engine Settings for information on the symbologies and RFID tags supported.
- Appendix II – CCD/Laser Scan Engine provides information on the reader settings as well as symbology settings for the CCD or Laser scan engine.
- Appendix III – LR/ELR Laser Scan Engine provides information on the reader settings as well as symbology settings for the Long Range Laser or Extra Long Range Laser scan engine.
- Appendix IV – 2D Scan Engine provides information on the reader settings as well as symbology settings for the 2D scan engine.

Note: If you accidentally selected the wrong reader type and downloaded the settings to the mobile computer, the mobile computer will use the defaults for the correct reader type instead.

2.1.2 CONFIGURE READER SETTINGS

Depending on the barcode reader selected, configure the associated reader settings. Refer to the Reader Settings Table in Appendixes II ~ IV.

2.1.3 CONFIGURE SYMBOLOGY SETTINGS

Depending on the barcode reader selected, configure the associated symbologies. Refer to the Symbology Settings Table in Appendixes II ~ IV. For a symbology along with the button 

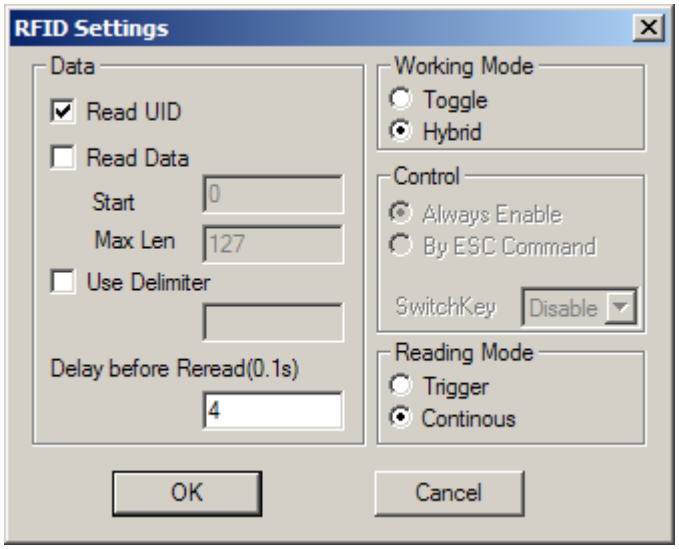
, it means advanced symbology settings are available.

2.1.4 CODE ID

Depending on the barcode reader selected, configure Code ID settings. Refer to the Code ID Table in Appendixes II ~ IV.

2.2 RFID READER

By default, the RFID reader is enabled to read UID only. Click the button RFID Settings to configure the associated settings.



2.2.1 DATA

Read UID

By default, the RFID reader is set to read tag UID (Unique Identification).

- UID: a permanent factory programmed unique identification (UID) code which is unique to each tag.

Read Data

Select the check box so that RFID data can be read.

- If only partial data is required, specify the start position and maximum length.

Use Delimiter

Select the check box and specify a delimiter to separate UID from data when both are read.

- Click the editing box and select one character from the Grid Control (ASCII codes).

Delay before Re-read

By default, the RFID reader is set to re-read the same tag by an interval of 0.4 second when the tag is not removed out of range.

- You may specify a delay time before re-read in the range of 1~9999, in units of 100 milliseconds.

2.2.2 WORKING MODE

Toggle

In this mode, only one reader can work at a time: either RFID or barcode reader.

Control Options	Working with the Switch Key
Always Enabled	The RFID reader is enabled after login; however, it will not work until you press the switch key. To stop it from working, press the switch key again.
By ESC Command	The RFID reader is disabled after login. It will not work until you send the ESC command to activate it and then press the switch key. ▸ The escape sequence for VT emulation is `ESC[3;1]`. To stop it from working, press the switch key again.

Hybrid (=dual mode)

By default, the RFID reader is always enabled and co-exists with the barcode reader, which is also called "dual mode" because both readers can work at the same time.

2.2.3 CONTROL

If **Toggle** is selected, you must select a switch key from the drop-down menu.

Always Enable

By default, the RFID reader is always enabled after login.

By ESC Command

If selected, the RFID reader is disabled after login. You must send the ESC command to enable it.

Switch Key

The switch key works as the toggle of readers. When you press it on the mobile computer, only one reader is allowed to work at a time.

- By default, the switch key is disabled.
- Select the switch key (FN+0 ~ FN+9). The selected combination will become unavailable on the Function Key Mapping list. For example, if you select FN+5, you will find the key combination mapped to "SwitchKey" in the Function Key Mapping on the Emulation tab.

Note: For VT emulation, you may send an escape sequence from a host to get device type, serial number, or control the hardware features of the mobile computer. Refer to Special ESC Commands & Hardware Test.

2.2.4 READING MODE

Trigger

If selected, you may press the trigger to start each RFID reading.

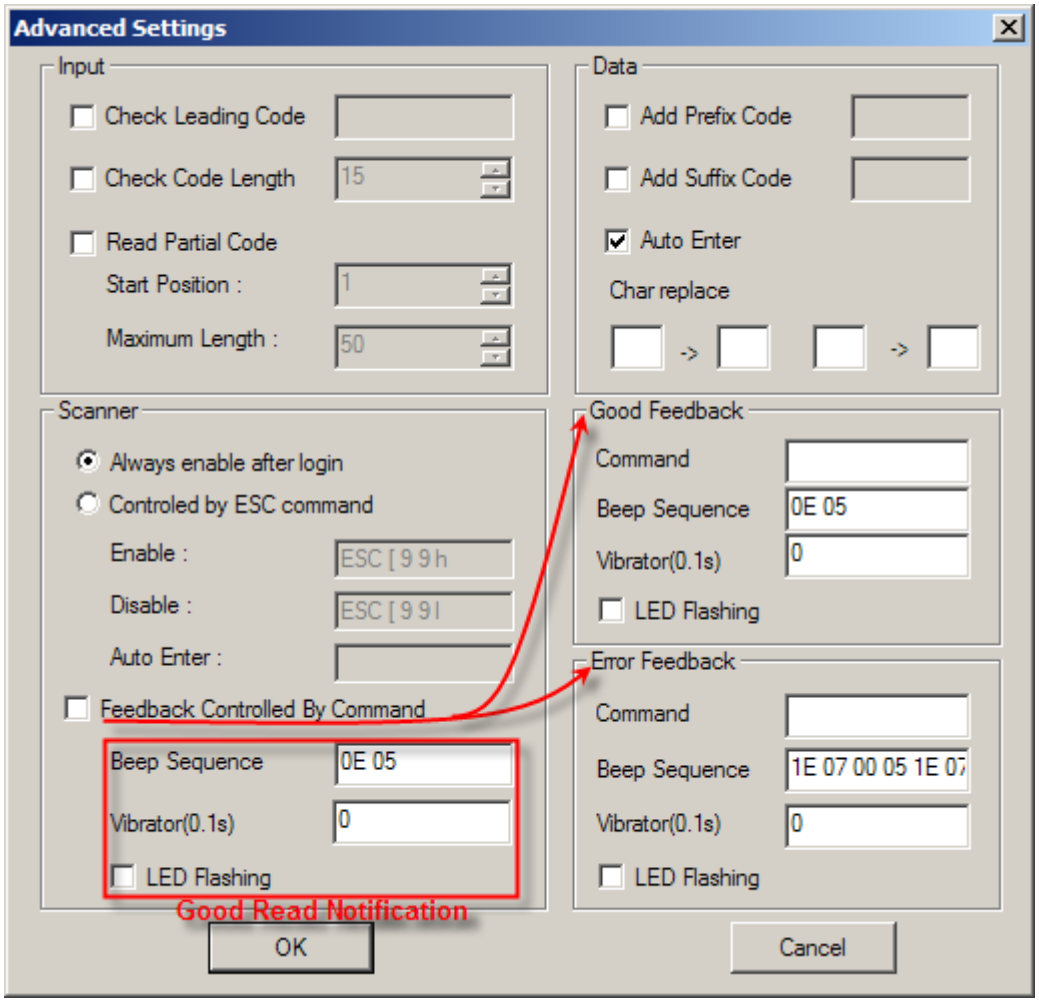
- When working mode is set "Hybrid", you can press the trigger to read an RFID tag or a barcode label depending on which one first comes in range.

Continuous

By default, the RFID reader works in a continuous way. It will keep on reading the same RFID tag until the tag is removed out of range.

2.3 ADVANCED SETTINGS

These settings are provided to enhance the read operation via the barcode reader.



2.3.1 INPUT

Check Leading Code

The leading code refers to the digit in the start position of a barcode. Select the check box to verify the barcode input. When the leading code is found mismatching, the barcode will be discarded.

Below are some examples.

Leading code	Barcode scanned	Transaction record
9	9876543210	9876543210
2	9876543210	(Discarded: code not matching)

Check Code Length

By default, the maximum barcode length is 15. Select the check box so that it will perform a length check on the barcode according to the length setting. When the barcode is found longer than the specified length, it will be discarded.

Read Partial Barcode

By default, it will return the whole barcode that has been decoded. Select the check box so that it will return partial barcode according to the settings of the start position and maximum length.

Below are some examples.

Start position	Max. length	Barcode scanned	Transaction record
2	10	9876543210	876543210
2	3	9876543210	876

Read partial code + Check leading code:

Start position	Max. length	Leading Code	Barcode scanned	Transaction record
2	7	8	9876543210	8765432
2	7	9	987654321	(Discarded)

2.3.2 SCANNER

Always Enable After Login

The barcode reader is always enabled after login because the scan engine detected is enabled by default.

Controlled by ESC Command

If selected, the barcode reader is suspended and must be controlled by ESC commands. Instead of using the default ESC commands or special commands, you may specify an ESC command in the following format — `ESC` then left bracket, followed by two numeric characters, and must end with a lower-case letter (a ~ z).

Option	Escape Sequence
Enable	You need to send one of the following ESC commands to enable it: ▸ Instead of the default `ESC[99h`, specify an ESC command if necessary. ▸ Special ESC Command — `ESC[2;1]`
Disable	To stop it from working, send one of the following ESC commands: ▸ Instead of the default `ESC[99l`, specify an ESC command if necessary. ▸ Special ESC Command — `ESC[2;0]`
Auto Enter	▸ You may also specify an escape sequence for automatically adding a carriage return to the end of each scan (= Scan+ENTER). ▸ Ignore this option if you already have the Auto Enter function enabled for data processing. Refer to 2.3.3 Data.

Feedback Controlled by ESC Command

By default, only a pair of beep sequence is used to indicate a successful decoding of barcode. You may specify vibrator duration or have LED flashing as well. Otherwise, select the check box if you wish to send an escape sequence from the host to control the buzzer, vibrator, and LED light. Proceed to **Good Feedback** and **Error Feedback**. You may specify an escape sequence to signal a good read or error.

Note: For VT emulation, you may send an escape sequence from a host to get device type, serial number, or control the hardware features of the mobile computer. Refer to Special ESC Commands & Hardware Test.

2.3.3 DATA

Add Prefix Code

Select the check box to prefix a code to the input data. Click the editing box next to it, and select one or more codes from the Grid Control (ASCII codes). For example, you may add a dollar sign "$" to the front of the input data for price information.

Add Suffix Code

Select the check box to suffix a code to the input data. Click the editing box next to it, and select one or more codes from the Grid Control (ASCII codes).

Note: You may use prefix/suffix code to wrap the input data.

Auto Enter

By default, a carriage return will be automatically added to the end of the barcode input (= Scan+ENTER). It can then directly proceed to next task upon completion of data input without requiring you to press the **Enter** key on the mobile computer. For barcode scanning, it proves to be timesaving.

Character Replacement

Up to two sets of character replacement are allowed. You may specify to replace a target character with another character. When the target character is found in the barcode data, it will automatically be replaced by the specified character.

2.3.4 GOOD READ (GOOD FEEDBACK)

When data is successfully read, the mobile computer may inform you by issuing a beep, vibrating, or flashing LED light.

Command

Specify the escape sequence to signal a good read. Click the editing box and select from the Grid Control.

Beep Sequence

A beep sequence refers to pairs of Beep Frequency(x) and Beep Duration(y). You may specify whether or not to have a beep when decoding of a barcode is done successfully.

- You may specify pairs of "x y" other than the default "0E 05". Click the editing box and select from the Grid Control.

Vibrator

Specify how long the vibrator is turned on (in units of 0.1 second) to indicate a barcode has been read successfully.

- By default, the vibrator is turned off.

LED Flashing

You may specify whether or not to have green LED indication when decoding of a barcode is done successfully.

- By default, the LED indication is disabled.

2.3.5 ERROR FEEDBACK

When an error occurs, the mobile computer may inform you by issuing a beep, vibrating, or flashing LED light.

Command

Specify the escape sequence to signal an error. Click the editing box and select from the Grid Control.

Beep Sequence

A beep sequence refers to pairs of Beep Frequency(x) and Beep Duration(y). You may specify whether or not to have a warning beep to notify that an error occurs while reading a barcode.

- You may specify pairs of "x y" other than the default "1E 07 00 05 1E 07". Click the editing box and select from the Grid Control.

Vibrator

Specify how long the vibrator is turned on (in units of 0.1 second) to notify that an error occurs while reading a barcode.

- By default, the vibrator is turned off.

LED Flashing

You may specify whether or not to have red LED indication to notify that an error occurs while reading a barcode.

- By default, the LED indication is disabled.

2.4 RESET

Click **Reset** to load the default settings. This applies to the following settings —

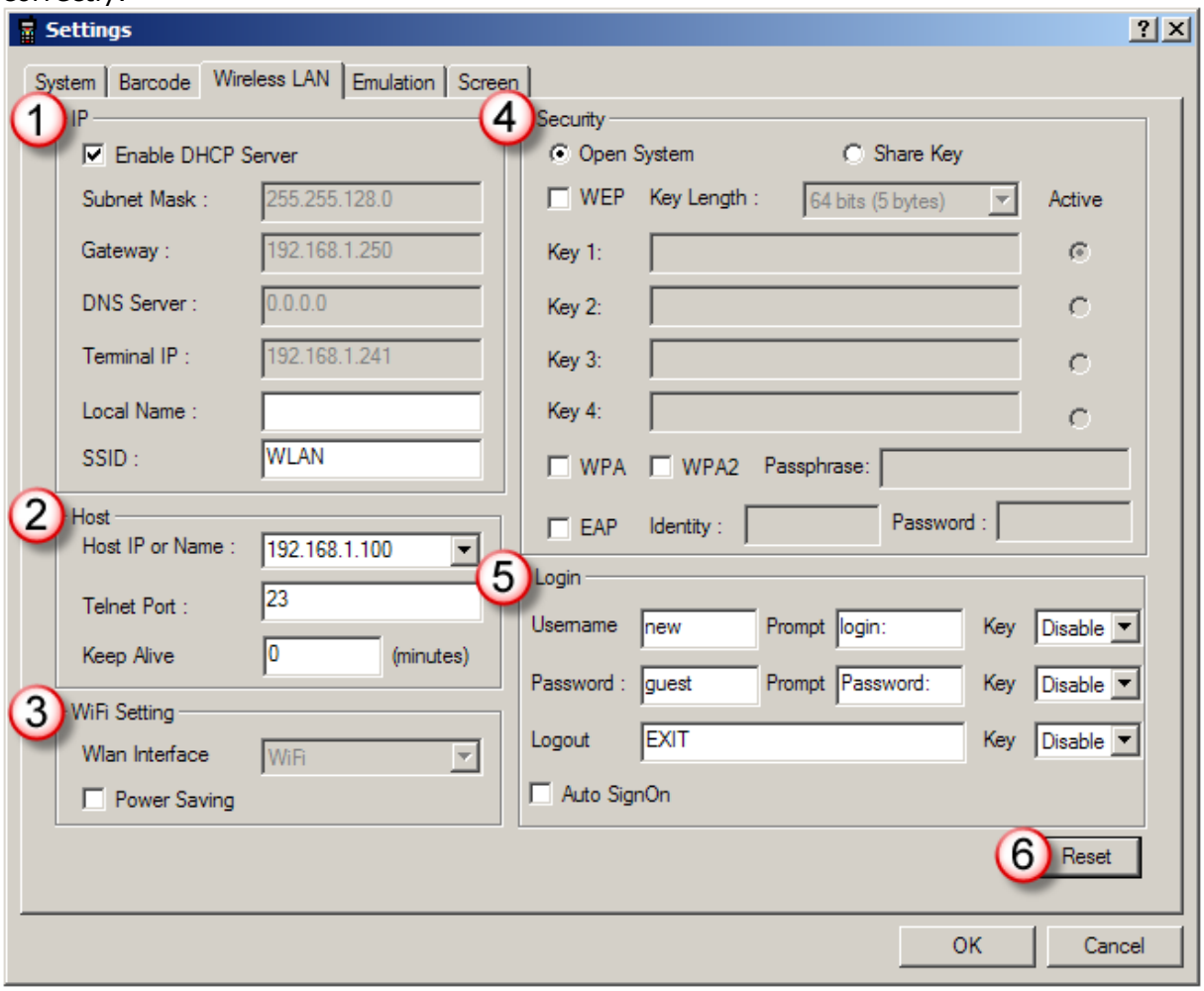
- Reader Settings
- Barcode & Parameters
- Advanced Settings
- RFID Settings

Note: The current settings will be cleared.

Chapter 3

WIRELESS LAN SETTINGS

To establish a telnet connection to a host, WLAN networking settings must be configured correctly.



Once the configuration file (.NET) has been downloaded to the mobile computer, the new settings will take effect immediately and become the defaults. However, you still can change many of the settings directly on the mobile computer via **CipherNet Runtime Menu** or **System Menu**:

CipherNet Runtime Menu — Press the Power key on the mobile computer.	
IP	CipherNet Runtime Menu | 2. Utilities | 1. TCP/IP Settings
Host	CipherNet Runtime Menu | 2. Utilities | 1. TCP/IP Settings
Wi-Fi Setting: Power Saving	CipherNet Runtime Menu | 2. Utilities | 1. TCP/IP Settings
Login	CipherNet Runtime Menu | 2. Utilities | 2. Emulation Settings

System Menu – Press 7, 9 and the Power key simultaneously on the mobile computer.	
IP	System Menu | 8. Next Page | 3. Wi-Fi Menu | 2. Network Setting
	System Menu | 8. Next Page | 3. Wi-Fi Menu | 3. WLAN Setting
Security	System Menu | 8. Next Page | 3. Wi-Fi Menu | 4. Security

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3.1 LOCAL IP

3.1.1 ENABLE DHCP SERVER

By default, DHCP server is enabled and all the settings can be obtained from it.

If DHCP server is disabled, you must provide the following information —

- Subnet Mask
- Gateway
- DNS Server
- Terminal IP

3.1.2 LOCAL NAME

You may enter a name for identifying the mobile computer.

3.1.3 SSID

This refers to Service Set ID or Identifier, which serves to uniquely identify a group of wireless network devices used in a given "Service Set". For example, you need to specify the same SSID here as is used for access points so that the mobile computer can associate to the access points.

Note: SSID can be made up of 32 characters maximum.

3.2 HOST IP

3.2.1 HOST IP/NAME

Specify the IP address or name of the host that you wish to access via telnet.

3.2.2 TELNET PORT

Specify the telnet port number. Port 23 is assigned by default.

3.2.3 KEEP ALIVE

During a normal telnet session, a host will send a checking packet to the mobile computer on a regular basis to maintain the connection. However, the host you access might not be configured to keep the session alive. In that case, you can have the mobile computer automatically send a checking packet to the host at intervals.

- By default, the value is set 0; that is, this feature is disabled.
- Specify the interval in the range of 0~255, in units of minute.

3.3 WLAN INTERFACE

Select "Wi-Fi" for 802.11b/g connectivity, and proceed to configure Wi-Fi security settings.

- Enable the Power Saving setting if necessary.

3.4 SECURITY

Authentication and encryption help provide data protection on the 802.11b/g network. Refer to 3.3 WLAN Interface.

3.4.1 OPEN SYSTEM/SHARED KEY

Two types of network authentication methods are supported: Open System and Shared Key.

Setting	Remark
Open System	Using Open authentication, any wireless station can request authentication. The station that needs to authenticate with another wireless station sends an authentication management frame that contains the identity of the sending station. The receiving station or AP will grant any request for authentication. ▸ Open authentication allows any device network access. If no encryption is enabled on the network, any device that knows the SSID of the access point can gain access to the network.
Shared Key	Using Shared Key authentication, each wireless station is assumed to have received a secret shared key over a secure channel that is independent from the

	802.11b/g wireless network communications channel. ▸ Shared key authentication requires that the client configure a static WEP key. The client access will be granted only if it passed a challenge based authentication.

Note: For Shared Key authentication, the active WEP key is used for authentication.

3.4.2 WEP KEY

Select the check box to implement Wired Equivalent Privacy or Wireless Encryption Protocol (WEP) for data encryption.

Setting	Remark
Key Length	Encryption type can be 64 bits (5 bytes) or 128 bits (13 bytes). ▸ Using 64-bit encryption, the password phrase can be 5 characters long. From the Grid Control, select up to 5 characters (ASCII codes) for the WEP key. ▸ For 128-bit encryption, the password phrase can be 13 characters long. From the Grid Control, select up to 13 characters (ASCII codes) for the WEP key.
Key 1 ~ 4	Key index number. Up to four WEP keys can be configured.
Active	Only one key (the active one) can be used at a time.

Note: You must use the same settings as configured for other devices on your wireless network, e.g. access points.

3.4.3 WPA-PSK/WPA2-PSK PASSPHRASE

WPA-PSK is supported to enhance security over wireless networks, and this Pre-Shared key mode requires a passphrase to access the network. The passphrase must be 8 to 63 characters (ASCII codes). It is used to generate a WEP key automatically.

- For 8400, it also supports WPA2-PSK!

3.4.4 EAP

Select the check box to enable authentication using Extensible Authentication Protocol (EAP). It requires user name and password so that the mobile computer can identify itself when associating to Cisco® access points.

Setting	Remark
Identity	Specify a user name. (32 characters maximum)
Password	Specify a password. (32 characters maximum)

3.5 LOGIN

To successfully log on to a host, the following settings must be specified correctly.

Note: After logging out properly, press **ESC** and **FN** (the function key) simultaneously to disconnect with the host and return to the main menu.

3.5.1 LOGIN

Normally, the cursor will stay on the "Username" field waiting for input during a fresh new telnet session. Instead of using the arrow keys to move the cursor to the "Password" input field, you may press the function key or key combination mapped to "Tab". For example, you may map the physical **Tab** key to "Tab" for 8500 Series. Refer to 4.5 Func Toggle & Function Key Mapping.

Setting	Remark
Username, Password	Specify username and password for logging on to the host you wish to access.
Shortcut Key	By default, the shortcut keys are disabled. You will have to enter the username and password manually. ▸ Select the shortcut keys (FN+0 ~ FN+9) so that you can enter the text string for Username and Password by two strokes. Each selected key combination will become unavailable on the Function Key Mapping list. For example, if you select FN+0 for "Username" and FN+1 for "Password", you will find them mapped to "Name Key" and "Password Key" individually in the Function Key Mapping on the Emulation tab.

Note: Use the shortcut keys to enter the text string for Username/Password by two strokes. For this feature to work properly, Username/Password must be specified correctly.

PROMPT FOR USERNAME/PASSWORD

Specify the prompt strings that request you to enter username and password. They must be exactly the same as received from the host. Refer to 3.5.3 Auto SignOn.

Note: If any of the prompt strings of the host system exceeds 20 characters, you will fail to sign on automatically.

3.5.2 LOGOUT

The logout command depends on the host applications. In order to exit the specific host application, you will have to send the correct command as required.

Setting	Remark
Logout	Specify the logout command that allows you to log off the host. It must be exactly the same string as displayed on the host screen.
Shortcut Key	By default, the shortcut keys are disabled. You will have to enter the logout command manually. ▸ Select the shortcut keys (FN+0 ~ FN+9). The selected key combination will become unavailable on the Function Key Mapping list. For example, if you select FN+2, you will find it mapped to "Exit Key" in the Function Key Mapping on the Emulation tab.

Note: For this feature to work properly, the logout string must be specified correctly. After logging out properly, press **ESC** and **FN** (the function key) simultaneously to disconnect with the host and return to the main menu.

3.5.3 AUTO SIGNON

By default, this feature is disabled. The host will request Username and Password every time the mobile computer attempts to log on.

- If this feature is supported by the host, select the check box so that the mobile computer can be allowed to automatically log on to the host. Refer to 3.5.1 Login.

Note: For this feature to work properly, Username/Password and each prompt string must be specified correctly and cannot exceed 20 characters.

3.6 RESET

Click **Reset** to load the default settings.

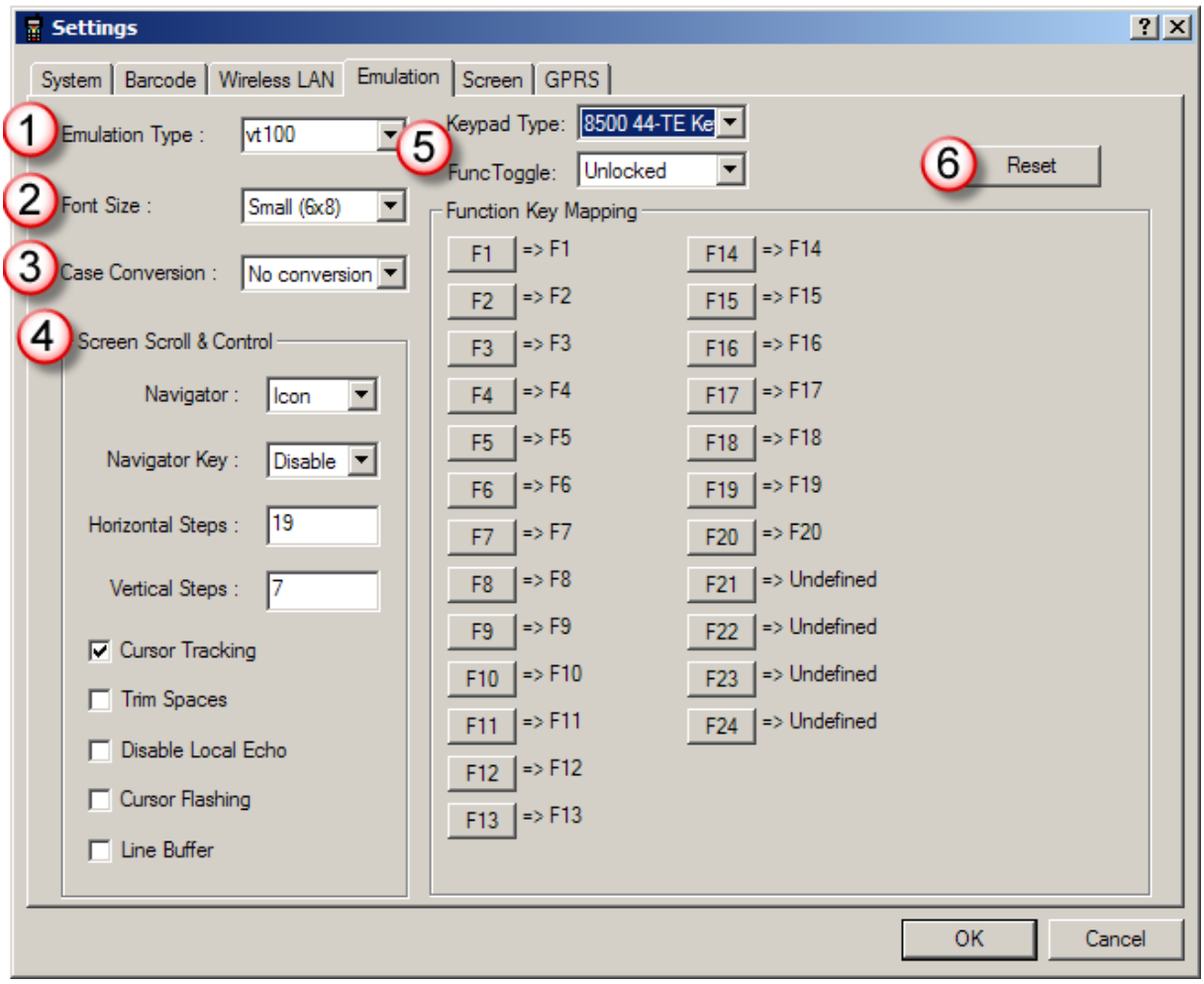
Note: The current settings will be cleared.

Chapter 4

EMULATION SETTINGS

To successfully emulate a VT terminal, emulation settings must be configured correctly. Once the configuration file (.NET) has been downloaded to the mobile computer, the new settings will take effect immediately and become the defaults. However, you still can change many of the settings directly on the mobile computer via **CipherNet Runtime Menu** or **System Menu**:

CipherNet Runtime Menu — Press the Power key on the mobile computer.	
Emulation Type	CipherNet Runtime Menu | 2. Utilities | 2. Emulation Settings
Screen Scroll & Control	CipherNet Runtime Menu | 2. Utilities | 2. Emulation Settings



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4.1 EMULATION TYPE

CipherNet-VT supports VT100 and VT220 terminal emulation.

- By default, the emulation type is VT100.

4.2 FONT SIZE

The terminal screen size varies by the mobile computer. Display capability, as shown below, depends on the screen size as well as the font you use. Refer to 1.4 Change Prompts & Messages.

Mobile Computer	Small (Font 6x8)	Large (Font 8x16)
8000 Series	16 characters by 8 lines (default)	12 characters by 4 lines
8300 Series	20 characters by 8 lines (default)	15 characters by 4 lines
8400 Series	26 characters by 18 lines (default)	20 characters by 9 lines
8500 Series	26 characters by 19 lines (default)	20 characters by 9 lines

By default, small font (6x8) is applied. Data coming in from the host will be displayed accordingly. This setting also affects the default horizontal/vertical steps the cursor move at one time on the host screen.

4.3 CASE CONVERSION

By default, there is no case conversion. Data coming in from the host will be displayed in letter case matching to the original.

- Options include "convert to lower/upper case". For example, if you select "to lower case", data coming in from the host will be converted to lower case; and vice versa.

4.4 SCREEN SCROLL & CONTROL

Limited to the actual screen size, the mobile computer can only display a portion of the host screen. The following features help ease working from the terminal screen.

4.4.1 NAVIGATOR

A navigator can be a graphic icon or miniature window on the terminal screen, indicating the relationship between the terminal screen and the host screen. A miniature cursor is blinking to indicate the input position.

Option	Remark
None	Disable the navigator.
Icon	By default, a graphic icon is used for navigation. ▸ Take 8500 Series for example. The icon will appear on the bottom line of the screen.
*20*15* *32*24*	Instead of the small icon, you may select "20*15" or "32*24" for a larger icon. ▸ Take 8500 Series for example. The icon will take the top few lines of the screen.

4.4.2 NAVIGATOR KEY

The navigator key works as the toggle of navigator. When you press the navigator key on the mobile computer, it will hide or show the navigator by turns.

- On 8300/8400/8500 Series, the navigator key only works when a larger icon (20*15 or 32*24) for navigator is applied.

Option	Remark
Disable	By default, the navigator key is disabled.
FN+0 ~ *FN+9*	Select a function key combination for the navigator key. ▸ Select the navigator key (FN+0 ~ FN+9). The selected key combination will become unavailable on the Function Key Mapping list. For example, if you select FN+6, you will find it mapped to "Navigator Key".

4.4.3 HORIZONTAL STEPS

Specify how many horizontal steps the cursor will move at a time on the host screen when you press the following key combinations simultaneously –

- **FN** + **Left** (for 8300/8400/8500 Series) or **FN** + **"-+$"** (for 8000 Series)
- **FN** + **Right** (for 8300/8400/8500 Series) or **FN** + **"%#•"** (for 8000 Series)

4.4.4 VERTICAL STEPS

Specify how many vertical steps the cursor will move at a time on the host screen when you press the following key combinations simultaneously –

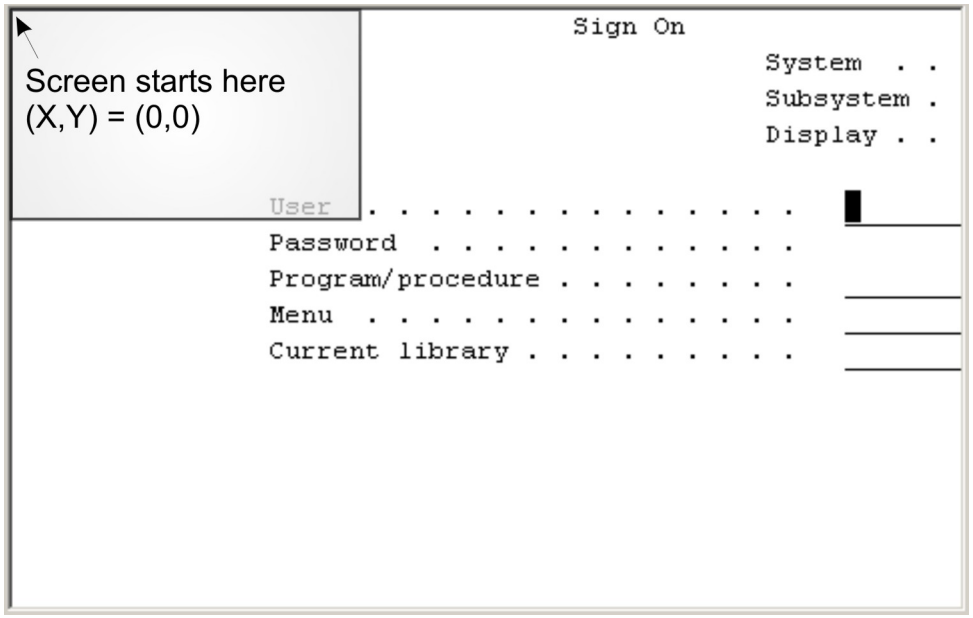
- **FN** + **Up**
- **FN** + **Down**

Note: The horizontal and vertical steps are associated with the font size.

4.4.5 CURSOR TRACKING

This feature is enabled by default. The terminal screen will automatically adjust itself so that the cursor will always be visible on the screen. Thus, every screen received from the host will be displayed with the cursor visible to indicate the first input field.

Note: This feature only works when a screen refresh incident occurs on the host.



When you disable the Cursor Tracking feature, the coordinates (0,0) on the terminal screen are related to (0,0) on the host screen. Thus, every screen received from the host will be first displayed starting from (0,0) regardless of the cursor.

The relationship between the terminal screen (small) and the host screen (large) is based on the upper-left point of the screens (see above). The cursor is outside of the terminal screen. To view the hidden information or locate the cursor, you need to adjust the terminal screen manually.

Horizontal / Vertical Steps

Press the following key combinations simultaneously –

- **FN** + **Left** (for 8300/8400/8500 Series) or **FN** + **"-+$"** (for 8000 Series)
- **FN** + **Right** (for 8300/8400/8500 Series) or **FN** + **"%#●"** (for 8000 Series)
- **FN** + **Up**
- **FN** + **Down**

When the Cursor Tracking feature is enabled, there will be a warning beep to indicate that the terminal screen has reached the boundaries of the host screen.

Note: For 8500 Series, the above function keys are originally used to adjust LCD contrast (**FN** + **Up**/**Down**) and backlight intensity (**FN** + **Left**/**Right**). After logging on to a host, these keys will be used to adjust the terminal screen instead. That is, you cannot use them to adjust LCD contrast and backlight intensity until you log out.

Cursor Movement

- To move the cursor to a desired input field, press the function key that is mapped to "Tab".
- To move the cursor to a desired input point, press the arrow keys **Up**, **Down**, **Left**, and **Right**.

4.4.6 TRIM SPACES

Select the check box to make the most use of the terminal screen; unnecessary spaces will be discarded. Take the following for example.

Original line: `->    1. Set up<-`

Trimmed `->1. Set up<-`

Note: Spaces between characters will not be discarded.

4.4.7 DISABLE LOCAL ECHO

By default, it will echo typed text locally on the mobile computer.

- Select the check box if local echo is not desired.

4.4.8 CURSOR FLASHING

Select the check box to have a flashing cursor.

4.4.9 LINE BUFFER

Select the check box to operate in line buffer mode.

4.5 FUNC TOGGLE & FUNCTION KEY MAPPING

The function key or key combination is one of the keys on the mobile physical keypad that transmit control codes. Control codes do not produce displayable characters but are codes for functions. If these codes are received by the mobile computer, it will perform the associated function as defined.

4.5.1 FUNC TOGGLE

Generally, a function key combination, which requires pressing **FN** to enter the function mode, works as follows —

1) Press **FN** on the 8300/8400/8500 Series mobile computer.

   There will be an "F" icon on the screen to indicate the function mode is on.

2) Press the second key to get the value of a key combination (say, press the number key **1** to get the value of **F1**). The icon will go off as the function mode is toggled off.

   To have the function mode persist, you may choose to lock the function toggle in advance so that it will not be toggled off automatically.

3) To get the value of another key combination, repeat the above steps.

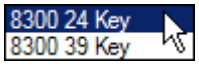
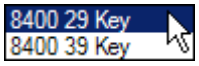
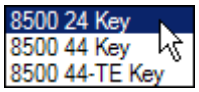
   To abort the function mode, press **FN** again and the icon will go off.

Note: For 8300/8400/8500 Series, the function key is unlocked by default.
For 8000 Series, the function key only works with the function toggle locked.

Function Toggle	Remark
Unlocked *(also known as Auto Resume mode)*	The function mode is toggled on by pressing the function key. It can be toggled off by pressing the second key of the key combination.
Locked *(also known as Toggle mode)*	The function mode is toggled on by pressing the function key. It can only be toggled off by pressing the function key again.

4.5.2 KEYPAD TYPE

The following options for keypad layout are supported for 8300/8400/8500 Series. Select the matching keypad type first, and map the available function keys to meet your needs.

Mobile Computer	Keypad Type	Remark
8300 Series		
8400 Series		
8500 Series		44-TE Key is a new option specifically provided for terminal emulation use!

4.5.3 KEY MAPPING

By default, FN+1 ~ FN+9, FN+0 (or F1 ~ F12 for 8500 44-key) are mapped to F1 ~ F9, F10 (F1 ~ F12), which are pre-defined as shown below. Click an available function key. You may change its key combination or re-define key code to meet a specific need.

Note: The function key mapping list varies by the mobile computer and keypad layout. If a specific key is not available on the physical keypad, its associated key mapping may not take effect.

For example, the following function keys may be required during a telnet session.

Function Key	Mapped to	Remarks
Any available key	F3	Exit the sign-on request.
Any available key	F12	Cancel a task.
Any available key	Switch Key	See 2.2 RFID Reader
Tab or any other key	Tab	See 3.5.1 Login – Username/Password
Any available key	Name Key	See 3.5.1 Login – Username/Password
Any available key	Password Key	See 3.5.1 Login – Username/Password
Any available key	Exit Key	See 3.5.2 Logout
Any available key	Navigator Key	See 4.4.2 Navigator Key

4.6 RESET

Click **Reset** to load the default settings.

Note: The current settings will be cleared.

Chapter 5

SCREEN REFORMATTING

The screen reformat feature requires you to enable it by entering the activation key on the mobile computer; otherwise, the screen settings cannot take effect. If you have received an activation key, proceed with the screen capture task.

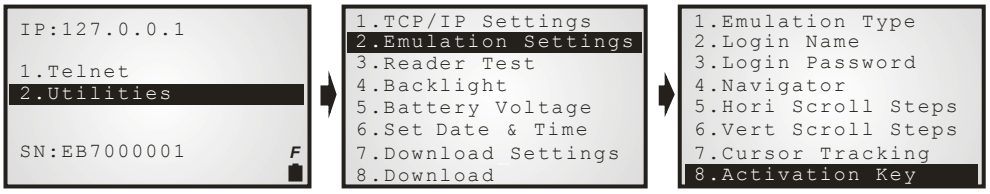
Note: CipherLab will issue a unique activation key under the pay-by-use policy. Please contact your local sales representative for licensing.

IN THIS CHAPTER

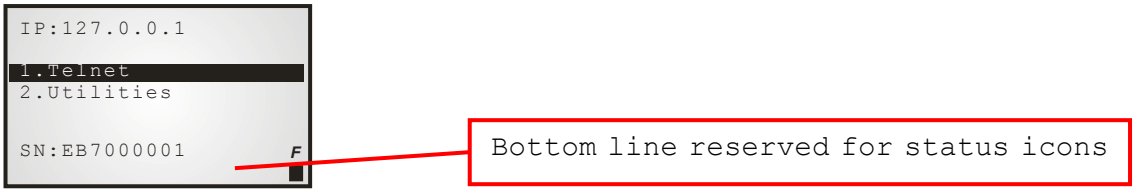
5.1 Activate the Screen Reformat Feature..... 41
5.2 Capture Host Session Screens 42
5.3 Reformat Host Screens 44

5.1 ACTIVATE THE SCREEN REFORMAT FEATURE

1) Press **Power** on the mobile computer to enter the **CipherNet Runtime Menu**.
2) Select **2. Utilities | 2. Emulation Settings |8. Activation Key**.



3) Scan the activation barcode (or enter the activation key you received).
4) Return to the main menu and select **1. Telnet**.



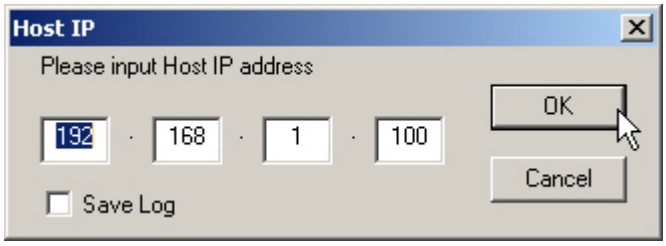
The mobile computer will be associated with an access point and connected to a host. A new session will start with reformatted screens. To exit the telnet session, press **ESC** and **FN** simultaneously after logging out properly.

5.2 CAPTURE HOST SESSION SCREENS

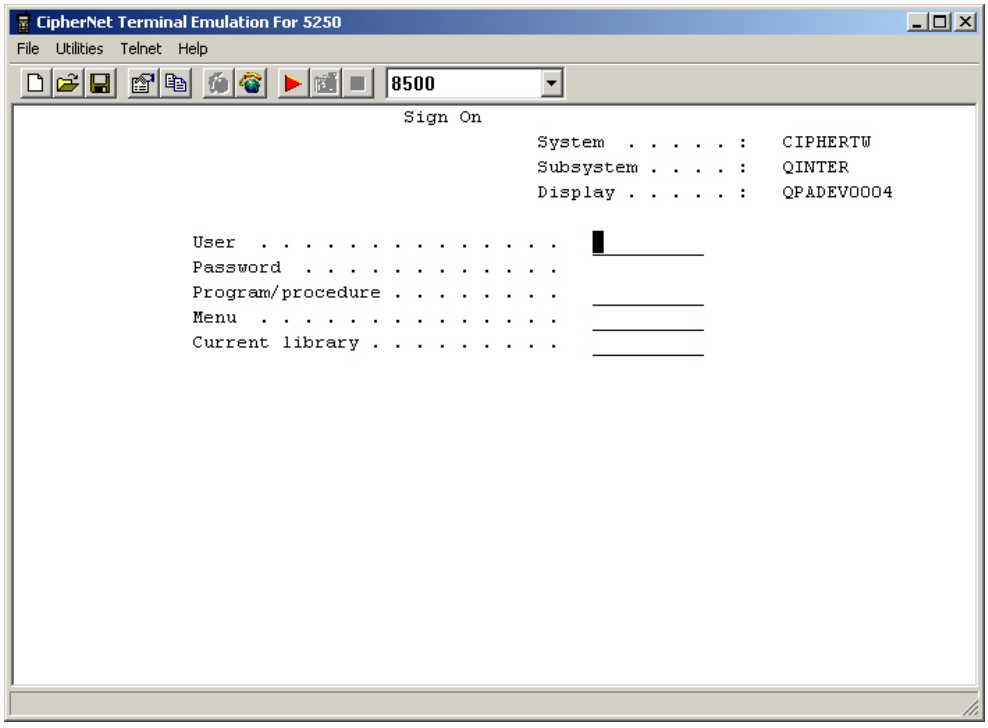
5.2.1 LOGON TO HOST

1) Run the CipherNet program on your computer.
2) Click **OK** to accept the End-User License Agreement (EULA).
3) Connect to the host via **Telnet Menu | Connect** or click on the toolbar.
4) Enter the IP address of the host that you wish to access via telnet.

   Select the check box of Save Log in case you need to analyze the activities during a telnet session. The information will be saved to a log file in the "Logs" folder automatically created in the same directory where the CipherNet program is.



5) Click **OK** to start connecting to the host. The host system will prompt you to enter username/password to login as shown below.


CipherNet Terminal Emulation For 5250
File Utilities Telnet Help
8500
Sign On
System . . . . . : CIPHERTW
Subsystem . . . . : QINTER
Display . . . . . : QPADEV0004
User . . . . . .
Password . . . . . .
Program/procedure . . . . . .
Menu . . . . . .
Current library . . . . . .

6) After login, you may start using the host application you need.

Note: Wireless LAN networking settings must be configured properly.

5.2.2 CAPTURE HOST SCREENS

You may capture screens from the host application using the associated commands via Telnet Menu or the following icons on the toolbar. A status message will appear on the left bottom of the CipherNet window, indicating the current status.

1) Click to start the capture task and save the host screens to a .SCR file.

   (Status message: Ready to capture)

2) Click to capture the current host screen. Skip unnecessary screens.

   (Status message: A total of screens that have been captured.)

3) Click to stop the capture task when you have captured the screens necessary for the terminal operation during a normal session.

4) Proceed to reformat host screens via **Utilities Menu | Configure**.

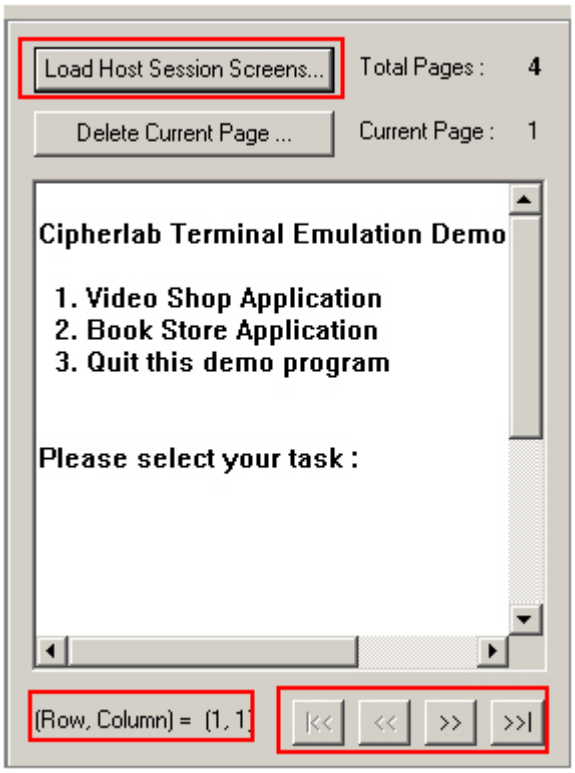
Note: Try to capture all the necessary screens. If you cannot decide which screen to skip now, capture it. You can always delete it later when the .SCR file is loaded for screen reformatting.

5.3 REFORMAT HOST SCREENS

The target is to reformat the captured host screens, or pages, so that they can be best displayed on the terminal screen.

The Screen settings page is divided into two parts: one is a window (left) displaying the captured host screens for viewing and editing, and the other is the associated forms (right) for reformatting these pages to fit in the terminal screen.

5.3.1 HOST SCREEN



Load Host Session Screens

Click to import the screens from a .SCR file. The total of pages, or screens, is displayed next to the button.

Click on any part of the window. The current position (Row, Column) will be displayed accordingly.

- Drag the horizontal/vertical scroll bars to view the hidden text of the current page.
- Click the four control buttons to change the page currently displayed –

for displaying the first page

for displaying the previous page

for displaying the next page

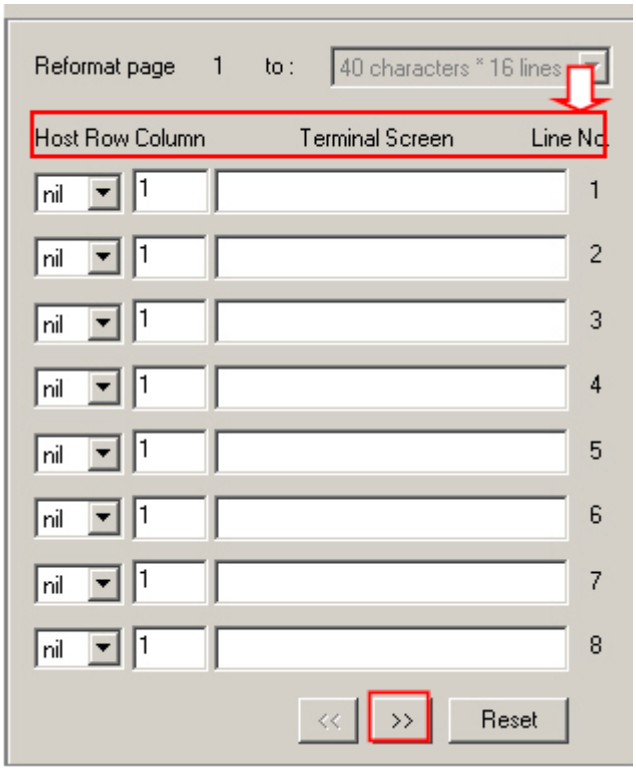
for displaying the last page

Delete Current Screen

Click Delete Current Page ... if the screen currently displayed is not desired for reformatting. The current number of page, or screen, is displayed next to the button.

Note: If you neither delete nor reformat a captured screen, there will be an empty screen displayed during a telnet session.

5.3.2 TERMINAL SCREEN



Reformat Page ... to

Specify the page format on the terminal screen. You can have different page format for different host screen.

- This setting or its options depend on the font size you use in 4.2 Font Size.

Host (Row, Column)

If the original message of a line does not prompt you to input selection, i.e. no input fields, leave the host row as "nil". You may simply rephrase the message. The same for host column; let it remain 1.

If the original message of a line prompts you to input selection, you need to specify both the host row and column; otherwise, the host will fail to catch it.

On the Host Screen window, click a desired input point and read its coordinates from the left bottom of the window. The coordinates are the values for host row and column.

Terminal Screen (Messages)

Copy the necessary messages from the Host Screen window and rephrase them, if necessary, to fit to the terminal screen.

Line No.

This indicates the line number when the message is displayed on the terminal screen.

Control Buttons

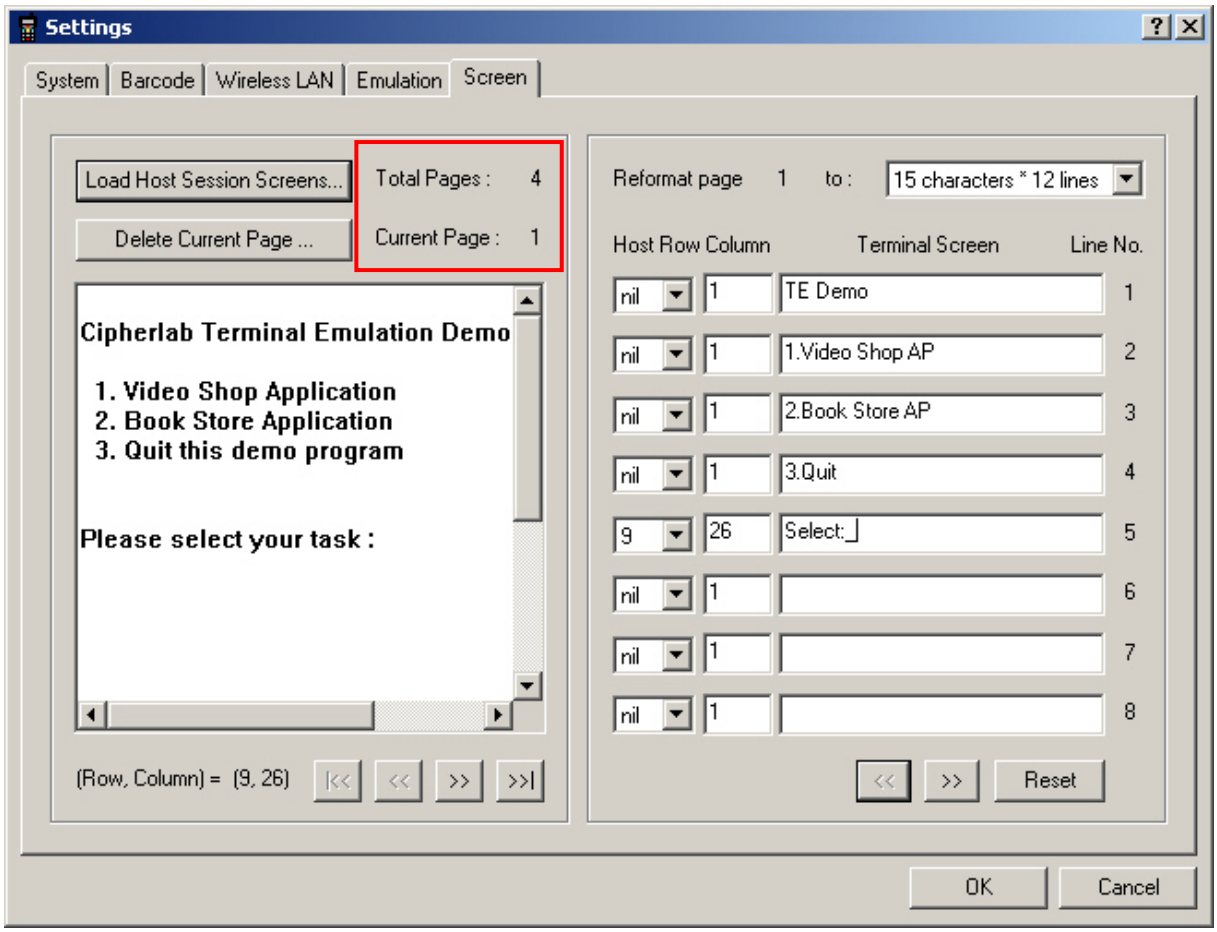
If the total lines of page format setting exceed 8, the two buttons will become available for moving forward or backward to display the rest lines.

Reset

Click **Reset** to load the default settings.

Note: The current host screens and settings for reformatting will be cleared after clicking **Reset**.

5.3.3 EXAMPLE



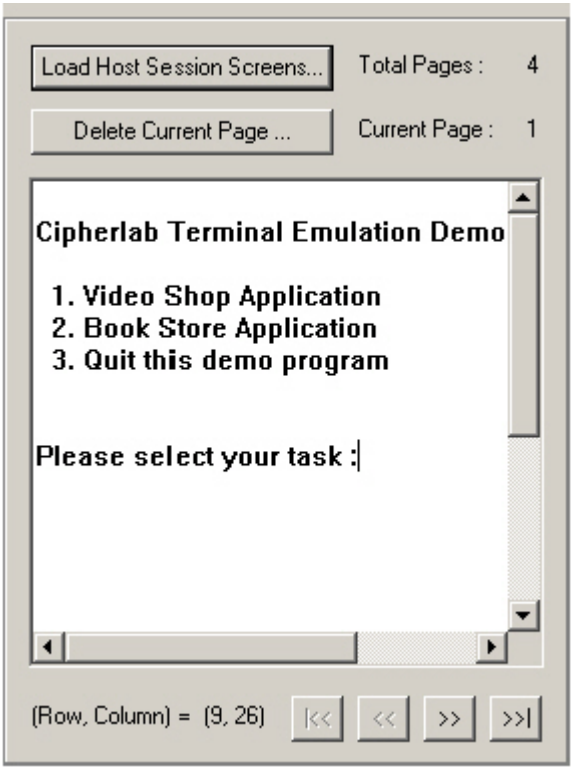
- You have loaded a total of 4 host screens, and currently work on the first page.
- From the Host Screen window (left), you can see there are five message lines and four empty lines on this page. You may ignore the empty lines and simply skip them when reformatting.
- Copy the necessary messages for reformatting (right). You may need to rephrase them so that they can best fit in to a terminal screen, which is decided by the page format of the terminal screen.

Note: Host Row/Column can be ignored if the message is not requesting you to input information.

- From the Host Screen window (left), click on the input point right following the last message "Please select your task :". Its coordinates are (9,26).

  Copy this message for reformatting (right). You may need to rephrase it as well. For example, enter "Select:_". The underline character "_" is used to indicate the maximum length for input.

Note: Host Row/Column and the maximum length for input must be specified correctly; otherwise, the host applications will not work properly.

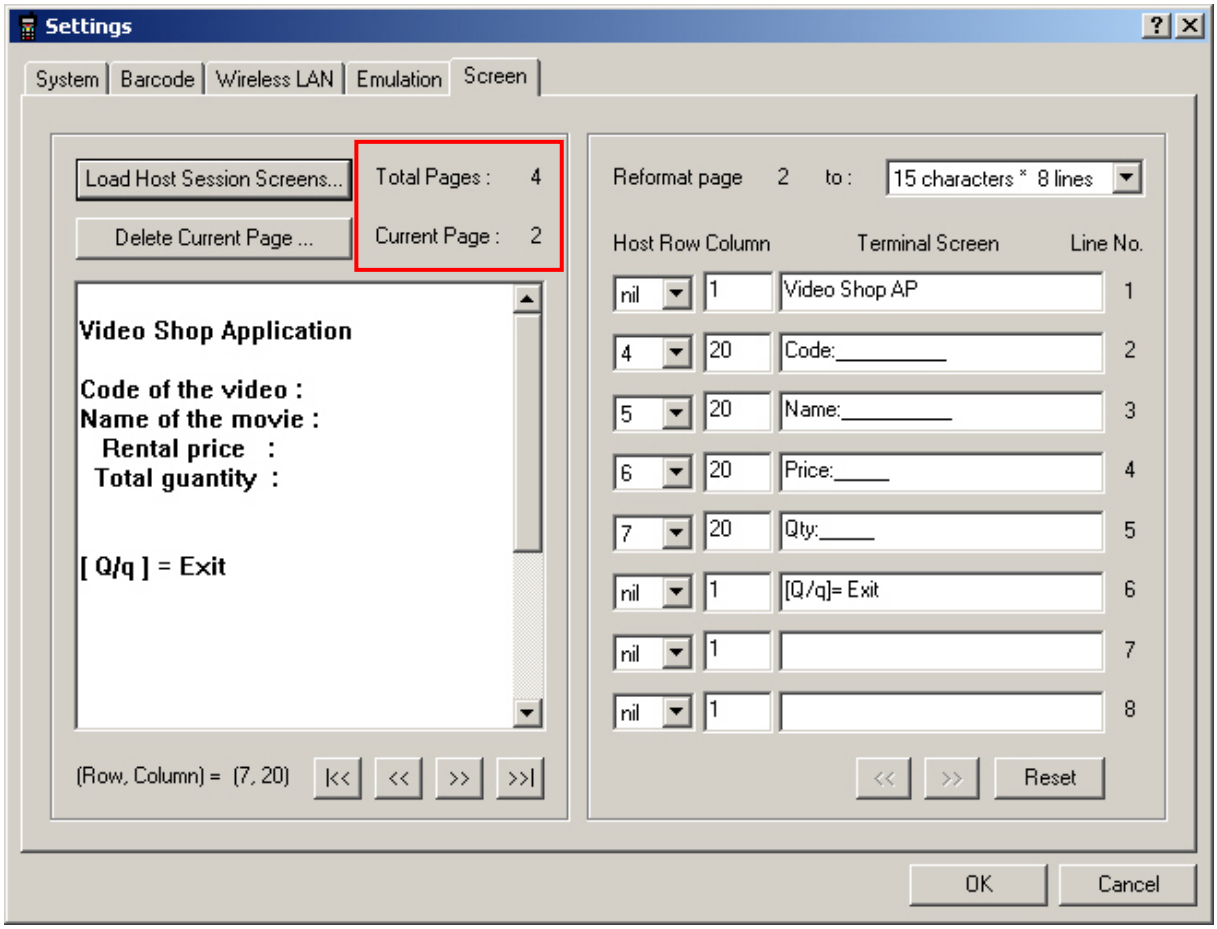


- Below shows the messages displayed on the host screen before reformatting, and those rephrased to be displayed on the terminal screen after reformatting.

Rows	Host Screen	Lines	Terminal Screen
1	(empty)	1	TE Demo

2	Cipherlab Terminal Emulation Demo	2	1.Video Shop AP
3	(empty)	3	2.Book Store AP
4	1. Video Shop Application	4	3.Quit
5	2. Book Store Application	5	Select:_
6	3. Quit this demo program	6	
7	(empty)	7	
8	(empty)	8	
9	Please select your task :	9	
(before reformatting)		(after reformatting)	

- Proceed to next host screen by clicking >> at the bottom of Host Screen window. If a host screen is not desired for reformatting, you must delete it by clicking Delete Current Page ...; otherwise, it will become an empty screen during a telnet session.



- Now proceed to the second page.
- From the Host Screen window (left), you can see there are six message lines and four empty lines on this page. You may ignore the empty lines and simply skip them for reformatting.
- Copy the necessary messages for reformatting (right). You may need to rephrase them so that they can best fit in to a terminal screen, which is decided by the page format of the terminal screen.

Note: Host Row/Column can be ignored if the message is not requesting you to input information.

- From the Host Screen window (left), click on the input point right following the four message:

  "Code of the video :" - Its coordinates are (4,20).

  "Name of the movie :" - Its coordinates are (5,20).

  " Retail price :" - Its coordinates are (6,20).

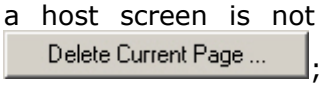
  " Total quantity :" - Its coordinates are (7,20).

  Copy the messages for reformatting (right). You may need to rephrase them as well. The underline character "_" is used to indicate the maximum length for input.

Note: Host Row/Column and the maximum length for input must be specified correctly; otherwise, the host applications will not work properly.

- Below shows the messages displayed on the host screen before reformatting, and those rephrased to be displayed on the terminal screen after reformatting.

Rows	Host Screen	Lines	Terminal Screen
1	(empty)	1	Video Shop AP
2	Video Shop Application	2	Code:_____
3	(empty)	3	Name:_____
4	Code of the video :	4	Price:_____
5	Name of the movie :	5	Qty:_____
6	Retail price :	6	[Q/q]= Exit
7	Total quantity :	7	
8	(empty)	8	
9	(empty)		
10	[Q/q] = Exit	9	
(before reformatting)		(after reformatting)	

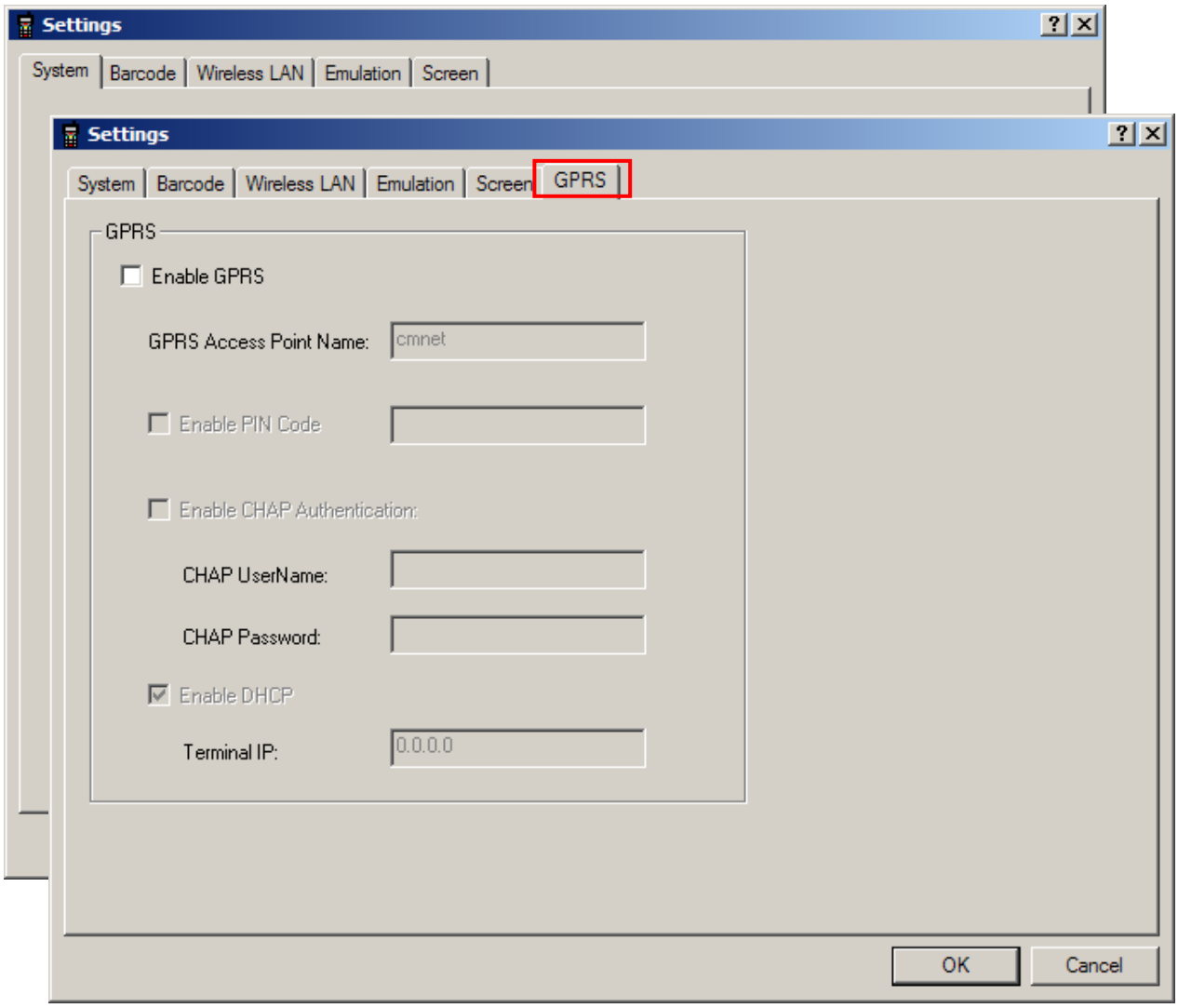
- Proceed to next host screen by clicking at the bottom of Host Screen window. If a host screen is not desired for reformatting, you must delete it by clicking  ; otherwise, it will become an empty screen during a telnet session.

Chapter 6

GPRS SETTINGS

The GPRS connectivity is only supported for 8500 Series.

- Access Point Name — name of access point that connects the mobile network to the Internet
- IP address (DHCP or static)
- User name and password (may be optional, depending on Challenge-Handshake Authentication Protocol)



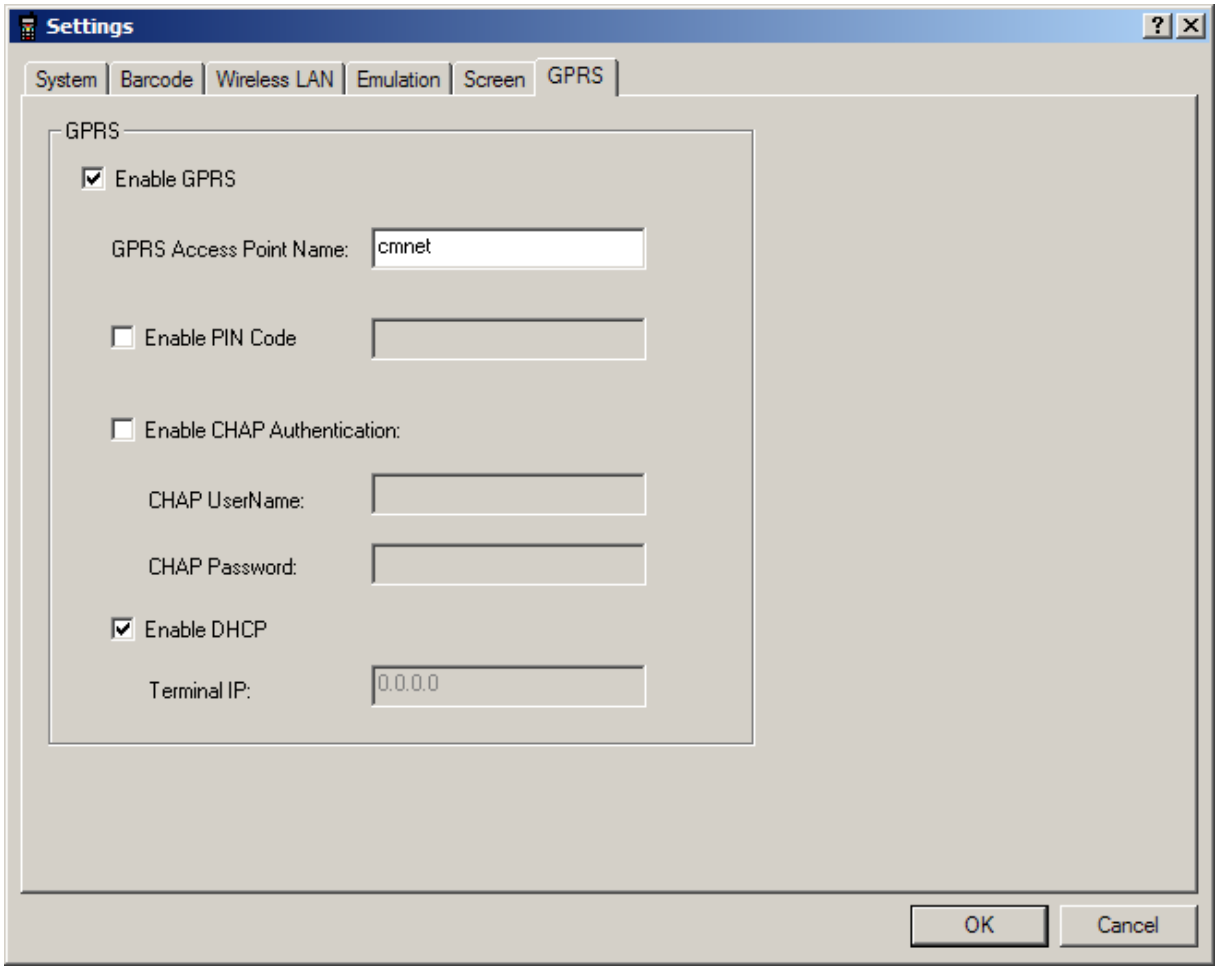
Once the configuration file (.NET) has been downloaded to the mobile computer, the new settings will take effect immediately and become the defaults. However, you still can change many of the settings directly on the mobile computer via **CipherNet Runtime Menu** or **System Menu**:

CipherNet Runtime Menu — Press the Power key on the mobile computer.	
GPRS Settings	CipherNet Runtime Menu | 2. Utilities | 1. TCP/IP Settings

System Menu — Press 7, 9 and the Power key simultaneously on the mobile computer.	
Access Point Name	System Menu | 8. Next Page | 3. GSM/GPRS Menu | 3. GPRS Settings
Enter PIN Code	System Menu | 8. Next Page | 3. GSM/GPRS Menu | 2. Security
CHAP Authentication	System Menu | 8. Next Page | 3. GSM/GPRS Menu | 3. GPRS Settings
DHCP	System Menu | 8. Next Page | 3. GSM/GPRS Menu | 3. GPRS Settings

Note: Please contact your Internet service provider (ISP) or network operator for information on GPRS related settings.

If you are using 8580 or 8590 with SIM card installed properly, select the check box to enable GPRS first. Then, give PIN code for SIM card and other information necessary for establishing a GPRS connection.



Item	Remark
Access Point Name	Required
PIN Code	Required if not using default
CHAP User Name & Password	Depends on CHAP authentication setting
IP Address, dynamic or static	Required; provide a static IP if DHCP is disabled

Appendix I

SCAN ENGINE SETTINGS

The **MIRROR Terminal Emulator** allows configuring the following reader types, depending on the module equipped on your mobile computer:

	8000	8300	8400	8500
Barcode Reader				
1D CCD Scan Engine	✓	✓	✓	✓
1D Laser Scan Engine	✓	✓	✓	✓
1D Long Range Laser Scan Engine (LR)	×	✓	×	✓
1D Extra Long Range Laser Scan Engine (ELR)	×	×	×	✓
2D Scan Engine	×	×	✓	✓
RFID Reader				
ACG_RFID Module v0.9	×	×	×	✓
ACG_RFID Module v1.0	×	✓	×	✓

Options of different reader combination are allowed, such as 1D+RFID and 2D+RFID. For each combination, both readers can be initialized and ready for scanning at the same time (dual mode operation). For example, if you press the **SCAN** button while running the CipherNet run-time program on the mobile computer, it will read a barcode in position or an RFID tag in proximity depending on which one comes first.

Note: You cannot have 1D+2D scan engines installed on the mobile computer because they are both barcode readers!

SYMBOLOGIES SUPPORTED

Varying by the scan engine installed, the supported symbologies or tag types are listed below. For details on configuring associated settings, please refer to each Appendix separately.

	CCD, Laser	LR, ELR	2D
Codabar	✓	✓	✓
Code 11	×	8300[Note]	✓

Note: Code 11 is supported on Long Range Laser scan engine for 8300 only.

Code 93	✓	✓	✓
Composite Code	×	×	✓
MSI	✓	✓	✓

Plessey		✓	×	×
Postal Codes		×	×	✓
Telepen		✓	×	×
Code 128	Code 128	✓	✓	✓
	GS1-128 (EAN-128)	✓	✓	✓
	ISBT 128	✓	✓	✓
Code 2 of 5	Industrial 25 (Discrete 25)	✓	✓	✓
	Interleaved 25	✓	✓	✓
	Matrix 25	✓	×	8400[Note]
	Chinese 25	×	×	8400[Note]
	Coop 25[Note]	✓	×	×

Note: (1) Matrix 25 and Chinese 25 are supported on 2D scan engine for 8400 only.
(2) Coop 25 is supported on CCD/Laser scan engine for 8000/8300/8400 only.

Code 3 of 9	Code 39	✓	✓	✓
	Trioptic Code 39	×	✓	✓
	Italian Pharmacode (Code 32)	✓	✓	✓
	French Pharmacode	✓	×	×
EAN/UPC	EAN-8	✓	✓	✓
	EAN-13	✓	✓	✓
	Bookland EAN (ISBN)	✓	✓	✓
	UPC-E0	✓	✓	✓
	UPC-E1	✓	✓	✓
	UPC-A	✓	✓	✓
GS1 DataBar (RSS)	GS1 DataBar Omnidirectional (RSS-14)	✓	✓	✓
	GS1 DataBar Truncated	✓	✓	✓
	GS1 DataBar Stacked	✓	✓	✓
	GS1 DataBar Stacked Omnidirectional	✓	✓	✓
	GS1 DataBar Limited (RSS Limited)	✓	✓	✓
	GS1 DataBar Expanded (RSS Expanded)	✓	✓	✓
	GS1 DataBar Expanded Stacked	✓	✓	✓
2D Symbologies	PDF417	×	×	✓
	MicroPDF417	×	×	✓
	Data Matrix	×	×	✓
	Maxicode	×	×	✓
	QR Code	×	×	✓

RFID TAGS SUPPORTED

The RFID reader supports read/write operations depending on the tags. The supported labels include ISO 15693, Icode®, ISO 14443A, and ISO 14443B. Currently, the performance of some tags has been confirmed, and the results are listed below for your reference. The results found with RFID module version 1.0 are different from those found with version 0.9 or older versions.

Note: You should study the specifications of RFID tags before use.

ACG_RFID Module Version 1.0		UID Only	Read Page	Write Page
ISO 14443A	Mifare Standard 1K	✓	✓	✓
	Mifare Standard 4K	✓	✓	✓
	Mifare Ultralight	✓	✓	✓
	Mifare DESFire	✓	---	---
	Mifare S50	✓	✓	✓
	SLE44R35	✓	---	---
	SLE66R35	✓	✓	✓
ISO 14443B	SRIX 4K	✓	✓	✓
	SR176	✓	✓	✓
ISO 15693	ICODE SLI	✓	✓	✓
	SRF55V02P	✓	---	---
	SRF55V02S	✓	---	---
	SRF55V10P	✓	---	---
	TI Tag-it HF-I	✓	✓	✓
ICODE® (Phillips)	ICODE	✓	✓	✓

ACG_RFID Module Version 0.9		UID Only	Read Page	Write Page
ISO 14443A	Mifare Standard 1K	✓	---	---
	Mifare Standard 4K	✓	---	---
	Mifare DESFire	✓	---	---
	Mifare S50	✓	---	---
	SLE44R35	✓	---	---
	SLE66R35	✓	---	---
ISO 15693	ICODE SLI	✓	✓	✓
	SRF55V02P	✓	✓	✓
	SRF55V02S	✓	---	---

	SRF55V10P	✓	✓	✓
	TI Tag-it HF-I	✓	✓	✓
	ST LRI64	✓	✓	✓
	ST LRI512	✓	✓	✓
Tagit®	Tagit	✓	✓	✓
ICODE® (Phillips)	ICODE	✓	✓	✓

Appendix II

CCD/LASER SCAN ENGINE

The tables below list reader settings as well as symbology settings for the CCD or Laser scan engine.

READER SETTINGS TABLE

CCD/Laser Engine	Description	Default
Scan Mode		**Laser mode**
Continuous Mode	Non-stop scanning ▸ To decode the same barcode repeatedly, move away the scan beam and target it at the barcode for each scanning.	
Test Mode	Non-stop scanning ▸ Capable of decoding the same barcode repeatedly	
Repeat Mode	Non-stop scanning ▸ Capable of re-transmitting barcode data if triggering within one second after a successful decoding	
Momentary Mode	Hold down the scan trigger to start with scanning. ▸ The scanning won't stop until you release the trigger.	
Alternate Mode	Press the scan trigger to start with scanning. ▸ The scanning won't stop until you press the trigger again.	
Aiming Mode	Press the scan trigger to aim at a barcode. Within one second, press the trigger again to decode the barcode. ▸ The scanning won't stop until (a) a barcode is decoded, (b) the pre-set timeout expires, or (c) you release the trigger.	
Laser Mode	Hold down the scan trigger to start with scanning. ▸ The scanning won't stop until (a) a barcode is read, (b) the preset timeout expires, or (c) you release the trigger.	
Auto Off Mode	Press the scan trigger to start with scanning. ▸ The scanning won't stop until (a) a barcode is read or (b) the preset timeout expires.	
Auto Power Off Mode	Press the scan trigger to start with scanning. ▸ The scanning won't stop until the preset timeout expires, and, the preset timeout period re-counts after each successful decoding.	
Read Redundancy		**None**
None	No redundancy means one successful decoding will make the reading valid and induce the "READER Event".	

One time, Two times, or Three times	The higher the reading security is (that is, the more redundancy the user selects), the slower the reading speed gets. ▸ If "Three Times" is selected, it will take a total of four consecutive successful decodings of the same barcode to make the reading valid.
Time-out	**3 sec.**
0~255 (second)	Set the maximum time for decoding to continue during a scan attempt. It applies to the following scan modes only – ▸ Aiming mode ▸ Laser mode ▸ Auto Off mode ▸ Auto Power Off mode

SYMBOLOGY SETTINGS TABLE

CCD/Laser Engine	Description	Default
Codabar		**Enable**
Transmit Start/Stop Character	Decide whether to include the start/stop characters in the data being transmitted. If "Transmit Start/Stop Characters" is desired, select one set: ▸ abcd / abcd ▸ abcd / tn*e ▸ ABCD / ABCD ▸ ABCD / TN*E	No
Code 128		**Enable**
GS1-128 (EAN-128)		**Enable**
Transmit Code ID (for EAN-128)	Decide whether to include Code ID (“]C1”) will be included in the data being transmitted.	No
Replace Field Separator	Decide whether to replace the field separator. If the barcode contains Field Separator “0x1D”, it will be changed to the desired Field Separator. For example, type the desired character “;” (semicolon) as the new field separator. Then if the barcode contains Field Separator “0x1D”, it will be changed to “;”.	No
ISBT 128		**Enable**
Industrial 25 (Discrete 25)		**Enable**
Start/Stop Selection	This decides the readability of all 2 of 5 symbology variants. For example, flight tickets actually use an Industrial 2 of 5 barcode but with Interleaved 2 of 5 start/stop pattern. In order to read this barcode, the start/stop pattern selection parameter of Industrial 2 of 5 should set to "Interleaved 25".	Industrial 25
Verify Check Digit	Decide whether to verify the check digit. If the check digit is incorrect, the barcode will not be accepted.	No

Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Yes
Select Length	▸ One or two fixed lengths ▸ Range	1~127
Interleaved 25		**Enable**
Start/Stop Selection	Refer to Industrial 25.	Interleaved 25
Verify Check Digit	Decide whether to verify the check digit. If the check digit is incorrect, the barcode will not be accepted.	No
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Yes
Select Length	▸ One or two fixed lengths ▸ Range	1~126
Matrix 25		**Disable**
Start/Stop Selection	Refer to Industrial 25.	Matrix 25
Verify Check Digit	Decide whether to verify the check digit. If the check digit is incorrect, the barcode will not be accepted.	No
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Yes
Select Length	▸ One or two fixed lengths ▸ Range	1~127
Coop 25		**Disable**
Verify Check Digit	Decide whether to verify the check digit. If the check digit is incorrect, the barcode will not be accepted.	No
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Yes

Note: Coop 25 is supported on CCD/Laser scan engine for 8000/8300/8400 only.

French Pharmacode		**Disable**
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Yes
Italian Pharmacode (Code 32)		**Disable**
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Yes

Note: For French/Italian Pharmacode, "Transmit Start/Stop Character" is not provided in UI but it is controlled by the same setting of Code 39.

Code 39		**Enable**
Transmit Start/Stop Character	Decide whether to include the start/stop characters "*" in the data being transmitted.	No
Verify Check Digit	Decide whether to verify the check digit. If the check digit is incorrect, the barcode will not be accepted.	No

Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Yes
Code 39 Full ASCII	Code 39 Full ASCII includes all the alphanumeric and special characters.	Disable
Code 93		**Enable**
MSI		**Disable**
Verify Check Digit	Select one of the three calculation formulas to verify the check digit. If the check digit is incorrect, the barcode will not be accepted. ▸ Single Modulo 10 ▸ Double Modulo 10 ▸ Modulo 11 & 10	Single Modulo 10
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted. ▸ Last digit not transmitted ▸ Both digits transmitted ▸ Both digits not transmitted	Both digits transmitted
Select Length	▸ One or two fixed lengths ▸ Range	1~127
Negative Barcode		**Disable**
Plessey		**Disable**
Convert to UK Plessey	When applied, each occurrence of the character "A" in the barcode data will be replaced by the character "X".	No
Transmit Check Digit	Decide whether to include the two check digits in the data being transmitted.	Yes
Telepen		**Disable**
Original Telepen (Numeric)	The original Telepen includes numeric characters.	No
AIM Telepen (Full ASCII)	AIM Telepen (Full ASCII) includes all the alphanumeric and special characters.	Yes
GS1 DataBar-14 (RSS-14)		**Disable**
GS1 DataBar-14 is short for GS1 DataBar Omnidirectional. This group consists of (1) GS1 DataBar Omnidirectional, (2) GS1 DataBar Truncated, (3) GS1 DataBar Stacked, and (4) GS1 DataBar Stacked Omnidirectional.		
Transmit Code ID	Decide whether to include Code ID ("]e0") will be included in the data being transmitted.	Yes
Transmit Application ID	Decide whether to include the Application ID ("01") in the data being transmitted.	Yes
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Yes
GS1 DataBar Limited (RSS Limited)		**Disable**
Transmit Code ID	Refer to RSS-14.	Yes

Transmit Application ID	Refer to RSS-14.	Yes
Transmit Check Digit	Refer to RSS-14.	Yes
GS1 DataBar Expanded (RSS Expanded)		**Disable**
This group consists of (1) GS1 DataBar Expanded, and (2) GS1 DataBar Expanded Stacked.		
Transmit Code ID	Refer to RSS-14.	Yes
EAN-8		**Enable**
Convert to EAN-13	The EAN-8 barcode will be expanded into EAN-13, and the next processing will follow the settings configured for EAN-13.	No
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Yes
Addon 2 / Addon 5	Decide whether to decode EAN-8 with addons.	No
EAN-13 / UPC-A		**Enable**
ISBN Conversion	The EAN-13 barcode starting with 978 and 979 will be converted to ISBN.	No
ISSN Conversion	The EAN-13 barcode starting with 977 will be converted to ISSN.	No
GTIN for EAN-13	The EAN-13 barcode will be expanded into 14-digit Global Trade Item Number (GTIN).	No
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Yes
Addon 2 / Addon 5	Decide whether to decode EAN-13/UPC-A with addons.	No
(UPC-A) Convert to EAN-13	The UPC-A barcode will be expanded into EAN-13, and the next processing will follow the settings configured for EAN-13.	Yes
(UPC-A) Transmit Check Digit	Decide whether to include the UPC-A check digit in the data being transmitted.	Yes
(UPC-A) Transmit System Number	Decide whether to include the UPC-A System Number in the data being transmitted.	Yes
UPC-E		**Enable**
Convert to UPC-A	The UPC-E barcode will be expanded into UPC-A, and the next processing will follow the settings configured for UPC-A.	No
Transmit Check Digit	Decide whether to include the UPC-E check digit in the data being transmitted.	Yes
Transmit System Number	Decide whether to include the UPC-E System Number in the data being transmitted.	No
Enable UPC-E1	Decide whether to decode both UPC-E0 and UPC-E1 barcodes. ▸ By default, it decodes the UPC-E0 barcodes only.	No

Enable UPC-E1 Triple Check	Decide whether to apply read redundancy to the UPC-E1 barcode. ▸ When applied, the same UPC-E1 barcode has to be read three times to make a valid reading. This is helpful when the barcode is defaced and requires more attempts to read it successfully.	No
Addon 2 / Addon 5	Decide whether to decode UPC-E with addons.	No

CODE ID TABLE

Code ID Options	Set 1	Set 2	Set 3	Set 4	Set 5
Code 39	A	C	Y	M	A
Italian Pharmacode	A	C	Y	M	A
French Pharmacode	A	C	Y	M	A
Industrial 25	C	H	H	H	S
Interleaved 25	D	I	Z	I	S
Matrix 25	E	G	G	G	S
Codabar	F	N	X	N	F
Code 93	I	L	L	L	G
Code 128	H	K	K	K	C
ISBT 128	H	K	K	K	C
UPC-E	S	E	C	E	E
EAN-8	P	B	B	FF	E
EAN-13	M	A	A	F	E
UPC-A	J	A	A	A	E
MSI	V	V	D	P	M
Plessey	W	W	E	Q	P
Telepen	Z	---	---	---	---

Appendix III

LR/ELR LASER SCAN ENGINE

The tables below list reader settings as well as symbology settings for the Long Range Laser (LR) or Extra Long Range Laser (ELR) scan engine.

READER SETTINGS TABLE

LR/ELR Engine	Description	Default
Scan Mode		**Laser mode**
Continuous Mode	Non-stop scanning ▸ To decode the same barcode repeatedly, move away the scan beam and target it at the barcode for each scanning.	
Test Mode	Non-stop scanning ▸ Capable of decoding the same barcode repeatedly	
Alternate Mode	Press the scan trigger to start with scanning. ▸ The scanning won't stop until you press the trigger again.	
Aiming Mode	Press the scan trigger to aim at a barcode. Within one second, press the trigger again to decode the barcode. ▸ The scanning won't stop until (a) a barcode is decoded, (b) the pre-set timeout expires, or (c) you release the trigger.	
Laser Mode	Hold down the scan trigger to start with scanning. ▸ The scanning won't stop until (a) a barcode is read, (b) the preset timeout expires, or (c) you release the trigger.	
Auto Off Mode	Press the scan trigger to start with scanning. ▸ The scanning won't stop until (a) a barcode is read or (b) the preset timeout expires.	
Aiming Duration		**3 sec.**
0~255 (second)	Set the maximum time for decoding to continue during a scan attempt. ▸ It applies to Aiming mode only.	

SYMBOLOGY SETTINGS TABLE

LR/ELR Engine	Description	Default
Codabar		**Disable**
Transmit Start/Stop Character	Decide whether to include the start/stop characters in the data being transmitted.	No
Select Length	▸ Any Length ▸ One or two fixed lengths ▸ Range (1~55)	Any Length
Code 128		**Enable**
GS1-128		**Enable**
Replace Field Separator	Decide whether to replace the field separator. If the barcode contains Field Separator "0x1D", it will be changed to the desired Field Separator. For example, type the desired character ";" (semicolon) as the new field separator. Then if the barcode contains Field Separator "0x1D", it will be changed to ";".	No
ISBT 128		**Enable**
Industrial 25 (Discrete 25)		**Enable**
Select Length	▸ Any Length ▸ One or two fixed lengths ▸ Range (1~55)	Any Length
Interleaved 25		**Enable**
Convert to EAN-13	Convert a 14-character barcode into EAN-13 if the following requirements are met: ▸ The barcode must have a leading 0 and a valid EAN-13 check digit.	No
Verify Check Digit	Decide whether to verify the check digit. If desired, select one of the algorithms below. If the check digit is incorrect, the barcode will not be accepted. ▸ No ▸ USS algorithm ▸ OPCC algorithm	No
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	No
Select Length	▸ Any Length ▸ One or two fixed lengths ▸ Range (1~55)	Any Length
Code 39		**Enable**
Convert to Code 32	Convert to Italian Pharmacode.	No
Verify Check Digit	Decide whether to verify the check digit. If the check digit is incorrect, the barcode will not be accepted.	No

<table>
<tr><td>Transmit Check Digit</td><td>Decide whether to include the check digit in the data being transmitted.
"Verify Check Digit" must be enabled so that the check digit can be left out (= "Transmit Check Digit" disabled).</td><td>No</td></tr>
<tr><td>Code 39 Full ASCII</td><td>Code 39 Full ASCII includes all the alphanumeric and special characters.</td><td>Disable</td></tr>
<tr><td>Trioptic Code 39</td><td>Decide whether to decode Trioptic Code 39.
Trioptic Code 39 is a variant of Code 39 used in the marking of computer tape cartridges. It always contains six characters.</td><td>Disable</td></tr>
<tr><td>Select Length</td><td>Any Length
One or two fixed lengths
Range (1~55)</td><td>Any Length</td></tr>
<tr><td colspan="2">Code 93</td><td>Disable</td></tr>
<tr><td>Select Length</td><td>Any Length
One or two fixed lengths
Range (1~55)</td><td>Any Length</td></tr>
<tr><td colspan="2">MSI</td><td>Disable</td></tr>
<tr><td>Verify Check Digit</td><td>If Two Check Digits option is selected, an additional verification is required to ensure integrity. Select one of the algorithms below. If the check digit is incorrect, the barcode will not be accepted.
<table>
<tr><th>Check Digit</th><th>Algorithm</th></tr>
<tr><td>One Check Digit</td><td>Single Modulo 10</td></tr>
<tr><td>Two Check Digits</td><td>Mod 10/Mod 11
Mod 10/Mod 10</td></tr>
</table></td><td>Single Modulo 10</td></tr>
<tr><td>Transmit Check Digit</td><td>Decide whether to include the check digit in the data being transmitted.</td><td>No</td></tr>
<tr><td>Select Length</td><td>Any Length
One or two fixed lengths
Range (1~55)</td><td>Any Length</td></tr>
<tr><td colspan="2">GS1 DataBar (RSS)</td><td>---</td></tr>
<tr><td>GS1 Databar-14</td><td>GS1 DataBar-14 is short for GS1 DataBar Omnidirectional. This group consists of (1) GS1 DataBar Omnidirectional, (2) GS1 DataBar Truncated, (3) GS1 DataBar Stacked, and (4) GS1 DataBar Stacked Omnidirectional.</td><td>Enable</td></tr>
<tr><td>GS1 Databar Limited</td><td></td><td>Enable</td></tr>
<tr><td>GS1 Databar Expanded</td><td>This group consists of (1) GS1 DataBar Expanded, and (2) GS1 DataBar Expanded Stacked.</td><td>Enable</td></tr>
</table>

Convert RSS to UPC/EAN	"Convert to UPC/EAN" only applies to GS1 Databar-14 and GS1 Databar Limited barcodes not decoded as part of a Composite barcode. **Convert to EAN-13** Strip the leading "010" from barcodes. ▸ "01" is the Application ID and must be followed by a single zero (the first digit encoded) **Convert to UPC-A** Strip the leading "0100" from barcodes. ▸ "01" is the Application ID and must be followed by two or more zeros (but not six zeros)	No
EAN-8		**Enable**
Convert to EAN-13	The EAN-8 barcode will be expanded into EAN-13, and the next processing will follow the settings configured for EAN-13.	No
Addon 2 / Addon 5	Refer to UPC/EAN Addon setting.	
EAN-13		**Enable**
Bookland EAN (ISBN)	The EAN-13 barcode starting with 978 will be converted to ISBN.	No
Addon 2 / Addon 5	Refer to UPC/EAN Addon setting.	
UPC-A		**Enable**
Transmit Check Digit	Decide whether to include the UPC-A check digit in the data being transmitted.	Yes
Transmit Preamble	Decide whether to include the UPC-A preamble System Number (and Country Code) in the data being transmitted.	System Number
Addon 2 / Addon 5	Refer to UPC/EAN Addon setting.	
UPC-E0		**Enable**
Transmit Check Digit	Decide whether to include the UPC-E0 check digit in the data being transmitted.	Yes
Transmit Preamble	Decide whether to include the UPC-E0 preamble System Number (and Country Code) in the data being transmitted.	System Number
Addon 2 / Addon 5	Refer to UPC/EAN Addon setting.	
Convert to UPC-A	The UPC-E0 barcode will be expanded into UPC-A, and the next processing will follow the settings configured for UPC-A.	No
UPC-E1		**Disable**
Transmit Check Digit	Decide whether to include the UPC-E1 check digit in the data being transmitted.	Yes
Transmit Preamble	Decide whether to include the UPC-E1 preamble System Number (and Country Code) in the data being transmitted.	System Number
Addon 2 / Addon 5	Refer to UPC/EAN Addon setting.	

Convert to UPC-A	The UPC-E1 barcode will be expanded into UPC-A, and the next processing will follow the settings configured for UPC-A.	No
UCC Coupon Extended Code		**Disable**
Read UPC-A barcodes starting with digit "5", EAN-13 barcodes starting with digits "99", and UPC-A/EAN-128 Coupon Codes. ▸ UPC-A, EAN-13, and EAN-128 must be enabled first!		
UPC/EAN Addon		**---**
Addon 2 / Addon 5	Decide whether to decode EAN-8, EAN-13, UPC-E0, UPC-E1, UPC-A with addons. ▸ Ignore Addons ▸ Decode Only With Addons ▸ Decode With Addons (= Auto-discriminate)	Ignore...
Code 11		**Enable**
Verify Check Digit	Decide whether to verify the check digit. If the check digit is incorrect, the barcode will not be accepted. ▸ No verification ▸ One Check Digit ▸ Two Check Digits	No
Select Length	▸ Any Length ▸ One or two fixed lengths ▸ Range (1~55)	Any Length

Note: Code 11 is supported on Long Range Laser scan engine for 8300 only.

CODE ID TABLE

Code ID Options	Set 1	Set 2	Set 3	Set 4	Set 5
Codabar	F	N	X	N	F
Industrial 25	C	H	H	H	S
Interleaved 25	D	I	Z	I	S
Code 39	A	C	Y	M	A
Trioptic Code 39	A	C	Y	M	X
Code 93	I	L	L	L	G
Code 128	H	K	K	K	C
Italian Pharmacode	A	C	Y	M	A
MSI	V	V	D	P	M
EAN-8	P	B	B	FF	E
EAN-13	M	A	A	F	E
UPC-A	J	A	A	A	E
UPC-E	S	E	C	E	E

Appendix IV

2D SCAN ENGINE

The tables below list reader settings as well as symbology settings for the 2D scan engine.

READER SETTINGS TABLE

2D Engine	Description	Default
Scan Mode		**Laser mode**
Continuous Mode	Non-stop scanning ▸ To decode the same barcode repeatedly, move away the scan beam and target it at the barcode for each scanning.	
Test Mode	Non-stop scanning ▸ Capable of decoding the same barcode repeatedly	
Alternate Mode	Press the scan trigger to start with scanning. ▸ The scanning won't stop until you press the trigger again.	
Aiming Mode	Press the scan trigger to aim at a barcode. Within one second, press the trigger again to decode the barcode. ▸ The scanning won't stop until (a) a barcode is decoded, (b) the pre-set timeout expires, or (c) you release the trigger.	
Laser Mode	Hold down the scan trigger to start with scanning. ▸ The scanning won't stop until (a) a barcode is read, (b) the preset timeout expires, or (c) you release the trigger.	
Auto Off Mode	Press the scan trigger to start with scanning. ▸ The scanning won't stop until (a) a barcode is read or (b) the preset timeout expires.	
Focus Mode	Select the focus mode to control the working range: ▸ Far Focus – optimized to read at its far position ▸ Near Focus – optimized to read at its near position ▸ Smart Focus – toggles the focus position after every frame	**Far Focus**
Decode Illumination	Decide whether to flash illumination on every barcode capture to aid decoding. ▸ Turn On (Internal LED) ▸ Turn Off	**On**
Aiming Pattern	Decide whether to project the aiming pattern during barcode capture. ▸ Turn On ▸ Turn Off	**On**

Time-out		**3 sec.**
0~255 (second)	Set the maximum time for decoding to continue during a scan attempt. It applies to the following scan modes only – ▸ Aiming mode ▸ Laser mode ▸ Auto Off mode	
Aiming Duration		**3 sec.**
1~255 (second)	Set the maximum time for aiming to continue before a scan attempt.	
Picklist Mode	Picklist mode enables the decoder to decode only barcodes aligned under the center of the laser aiming pattern. ▸ Enable ▸ Disable	**Disable**
1D Inverse Decode	1D Inverse Decoder: ▸ Decode regular 1D barcode only ▸ Decode inverse 1D barcode only ▸ Decode both regular and inverse	**Decode regular 1D barcode only**

Note: (1) Focus Mode is supported on 2D scan engine for 8500 only.
(2) Picklist Mode and 1D Inverse Decoding are supported on 2D scan engine for 8400 only.

SYMBOLOGY SETTINGS TABLE

1D SYMBOLOGIES

2D Engine	Description	Default
Codabar		**Disable**
Transmit Start/Stop Character	Decide whether to include the start/stop characters in the data being transmitted.	No
Select Length	▸ Any Length ▸ One or two fixed lengths ▸ Range (1~55)	Any Length
Code 128		**Enable**
GS1-128		**Enable**
Replace Field Separator	Decide whether to replace the field separator. If the barcode contains Field Separator "0x1D", it will be changed to the desired Field Separator. For example, type the desired character ";" (semicolon) as the new field separator. Then if the barcode contains Field Separator "0x1D", it will be changed to ";".	No
ISBT 128		**Enable**
Industrial 25 (Discrete 25)		**Enable**
Select Length	▸ Any Length ▸ One or two fixed lengths ▸ Range (1~55)	Any Length
Interleaved 25		**Enable**
Convert to EAN-13	Convert a 14-character barcode into EAN-13 if the following requirements are met: ▸ The barcode must have a leading 0 and a valid EAN-13 check digit.	No
Verify Check Digit	Decide whether to verify the check digit. If desired, select one of the algorithms below. If the check digit is incorrect, the barcode will not be accepted. ▸ No ▸ USS algorithm ▸ OPCC algorithm	No
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	No
Select Length	▸ Any Length ▸ One or two fixed lengths ▸ Range (1~55)	Any Length

Matrix 25		**Disable**
Verify Check Digit	Decide whether to verify the check digit. If the check digit is incorrect, the barcode will not be accepted.	No
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	No
Select Length	▸ Any Length ▸ One or two fixed lengths ▸ Range (1~55)	Any Length
Chinese 25		**Disable**

Note: Matrix 25 and Chinese 25 are supported on 2D scan engine for 8400 only.

Code 39		**Enable**
Convert to Code 32	Convert to Italian Pharmacode.	No
Verify Check Digit	Decide whether to verify the check digit. If the check digit is incorrect, the barcode will not be accepted.	No
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted. ▸ "Verify Check Digit" must be enabled so that the check digit can be left out (= "Transmit Check Digit" disabled).	No
Code 39 Full ASCII	Code 39 Full ASCII includes all the alphanumeric and special characters.	Disable
Trioptic Code 39	Decide whether to decode Trioptic Code 39. ▸ Trioptic Code 39 is a variant of Code 39 used in the marking of computer tape cartridges. It always contains six characters.	Disable
Select Length	▸ Any Length ▸ One or two fixed lengths ▸ Range (1~55)	Any Length
Code 93		**Disable**
Select Length	▸ Any Length ▸ One or two fixed lengths ▸ Range (1~55)	Any Length
MSI		**Disable**
Verify Check Digit	If Two Check Digits option is selected, an additional verification is required to ensure integrity. Select one of the algorithms below. If the check digit is incorrect, the barcode will not be accepted.	Single Modulo 10

<table>
<tr><td></td><td><table><tr><th>Check Digit</th><th>Algorithm</th></tr><tr><td>One Check Digit</td><td>Single Modulo 10</td></tr><tr><td>Two Check Digits</td><td>▸ Mod 10/Mod 11
▸ Mod 10/Mod 10</td></tr></table></td><td></td></tr>
<tr><td>Transmit Check Digit</td><td>Decide whether to include the check digit in the data being transmitted.</td><td>No</td></tr>
<tr><td>Select Length</td><td>▸ Any Length
▸ One or two fixed lengths
▸ Range (1~55)</td><td>Any Length</td></tr>
<tr><td colspan="2">GS1 DataBar (RSS)</td><td>---</td></tr>
<tr><td>GS1 Databar-14</td><td>GS1 DataBar-14 is short for GS1 DataBar Omnidirectional. This group consists of (1) GS1 DataBar Omnidirectional, (2) GS1 DataBar Truncated, (3) GS1 DataBar Stacked, and (4) GS1 DataBar Stacked Omnidirectional.</td><td>Enable</td></tr>
<tr><td>GS1 Databar Limited</td><td></td><td>Enable</td></tr>
<tr><td>GS1 Databar Expanded</td><td>This group consists of (1) GS1 DataBar Expanded, and (2) GS1 DataBar Expanded Stacked.</td><td>Enable</td></tr>
<tr><td>Convert RSS to UPC/EAN</td><td>"Convert to UPC/EAN" only applies to GS1 Databar-14 and GS1 Databar Limited barcodes not decoded as part of a Composite barcode.<table><tr><th>Convert to EAN-13</th></tr><tr><td>Strip the leading "010" from barcodes.
▸ "01" is the Application ID and must be followed by a single zero (the first digit encoded)</td></tr><tr><th>Convert to UPC-A</th></tr><tr><td>Strip the leading "0100" from barcodes.
▸ "01" is the Application ID and must be followed by two or more zeros (but not six zeros)</td></tr></table></td><td>No</td></tr>
<tr><td colspan="2">EAN-8</td><td>Enable</td></tr>
<tr><td>Convert to EAN-13</td><td>The EAN-8 barcode will be expanded into EAN-13, and the next processing will follow the settings configured for EAN-13.</td><td>No</td></tr>
<tr><td>Addon 2 / Addon 5</td><td>Refer to UPC/EAN Addon setting.</td><td></td></tr>
<tr><td colspan="2">EAN-13</td><td>Enable</td></tr>
<tr><td>Bookland EAN (ISBN)</td><td>The EAN-13 barcode starting with 978 will be converted to ISBN.</td><td>No</td></tr>
<tr><td>Addon 2 / Addon 5</td><td>Refer to UPC/EAN Addon setting.</td><td></td></tr>
<tr><td colspan="2">UPC-A</td><td>Enable</td></tr>
<tr><td>Transmit Check Digit</td><td>Decide whether to include the UPC-A check digit in the data being transmitted.</td><td>Yes</td></tr>
</table>

Transmit Preamble	Decide whether to include the UPC-A preamble System Number (and Country Code) in the data being transmitted.	System Number
Addon 2 / Addon 5	Refer to UPC/EAN Addon setting.	
UPC-E0		**Enable**
Transmit Check Digit	Decide whether to include the UPC-E0 check digit in the data being transmitted.	Yes
Transmit Preamble	Decide whether to include the UPC-E0 preamble System Number (and Country Code) in the data being transmitted.	System Number
Addon 2 / Addon 5	Refer to UPC/EAN Addon setting.	
Convert to UPC-A	The UPC-E0 barcode will be expanded into UPC-A, and the next processing will follow the settings configured for UPC-A.	No
UPC-E1		**Disable**
Transmit Check Digit	Decide whether to include the UPC-E1 check digit in the data being transmitted.	Yes
Transmit Preamble	Decide whether to include the UPC-E1 preamble System Number (and Country Code) in the data being transmitted.	System Number
Addon 2 / Addon 5	Refer to UPC/EAN Addon setting.	
Convert to UPC-A	The UPC-E1 barcode will be expanded into UPC-A, and the next processing will follow the settings configured for UPC-A.	No
UCC Coupon Extended Code		**Disable**
Read UPC-A barcodes starting with digit "5", EAN-13 barcodes starting with digits "99", and UPC-A/EAN-128 Coupon Codes. ▸ UPC-A, EAN-13, and EAN-128 must be enabled first!		
UPC/EAN Addon		**---**
Addon 2 / Addon 5	Decide whether to decode EAN-8, EAN-13, UPC-E0, UPC-E1, UPC-A with addons. ▸ Ignore Addons ▸ Decode Only With Addons ▸ Decode With Addons (= Auto-discriminate)	Ignore...
Code 11		**Disable**
Verify Check Digit	Decide whether to verify the check digit. If the check digit is incorrect, the barcode will not be accepted. ▸ No verification ▸ One Check Digit ▸ Two Check Digits	No
Select Length	▸ Any Length ▸ One or two fixed lengths ▸ Range (1~55)	Any Length

Postal Codes		**---**
US Postnet		Enable
US Planet		Enable
Transmit US Postal Check Digit	US Postnet or US Planet must be enabled first!	Enable
UK Postal		Enable
Transmit UK Postal Check Digit	UK Postal must be enabled first!	Enable
Japan Postal		Enable
Australian Postal		Enable
Dutch Postal		Enable
UPU FICS Postal		Disable
USPS 4CB/One Code/ Intelligent Mail		Disable

Note: UPU FICS Postal and USPS 4CB/One Code/ Intelligent Mail are supported on 2D scan engine for 8400 only.

Composite Codes		**Disable**
Composite CC-C		Disable
Composite CC-A/B		Disable
Composite TLC-39		Enable
GS1-128 Emulation Mode for UCC/EAN Composite Codes	Transmit UCC/EAN Composite Code data as if it was encoded in GS1-128 barcodes.	Disable
UPC Composite Mode	UPC barcodes can be "linked" with a 2D barcode during transmission as if they were one barcode. **UPC Never Linked** Transmit UPC barcodes regardless of whether a 2D barcode is detected. **UPC Always Linked** Transmit UPC barcodes and the 2D portion. If the 2D portion is not detected, the UPC barcode will not be transmitted. ▸ CC-A/B or CC-C must be enabled! **Auto-discriminate UPC Composites** Transmit UPC barcodes as well as the 2D portion if present.	UPC Always Linked

2D SYMBOLOGIES

2D Engine	Description	Default
2D Symbologies		**---**
PDF417		Enable
MicroPDF417		Enable
Data Matrix		Enable
Data Matrix Inverse	Decide whether to decode Data Matrix Inverse. **Regular Only** Decode regular Data Matrix barcodes only. **Inverse Only** Decode inverse Data Matrix barcodes only. **Inverse Autodetect** Decode both regular and inverse Data Matrix barcodes.	Regular Only
Mirror Image (for Data Matrix)	Decide whether to decode mirror image Data Matrix barcodes. **Never** Do not decode Data Matrix barcodes that are mirror images. **Always** Decode only Data Matrix barcodes that are mirror images. **Auto** Decode both mirrored and unmirrored Data Matrix barcodes.	Never
Maxicode		Enable
QR Code		Enable
QR Code Inverse	Decide whether to decode QR Code Inverse. **Regular Only** Decode regular QR Code only. **Inverse Only** Decode inverse QR Code only. **Inverse Autodetect** Decode both regular and inverse QR Code.	Regular Only

MicroQR		Enable
Aztec		Enable
Aztec Inverse	Decide whether to decode Aztec Inverse. **Regular Only** Decode regular Aztec barcodes only. **Inverse Only** Decode inverse Aztec barcodes only. **Inverse Autodetect** Decode both regular and inverse Aztec barcodes.	Regular Only

Note: Data Matrix Mirror, MicroQR, Aztec, and 2D Inverse are supported on 2D scan engine for 8400 only.

2D Symbologies - Macro PDF		**---**
Macro PDF is a special feature for concatenating multiple PDF barcodes into one file, known as Macro PDF417 or Macro MicroPDF417.		
Transmit/Decode Mode	Decide how to handle Macro PDF decoding. **Buffer All Symbols / Transmit Macro PDF When Complete** Transmit all decoded data from an entire Macro PDF sequence only when the entire sequence is scanned and decoded. If the decoded data exceeds the limit of 50 symbols, no transmission because the entire sequence was not scanned! **Transmit Any Symbol in Set / No Particular Order** Transmit data from each Macro PDF symbol as decoded, regardless of the sequence. **Passthrough All Symbols** Transmit and decode all Macro PDF symbols and perform no processing. In this mode, the host is responsible for detecting and parsing the Macro PDF sequences.	Passthrough All Symbols
ESC Characters	When enabled, it uses the backslash "\" as an Escape character for systems that can process transmissions containing special data sequences. It will format special data according to the Global Label Identifier (GLI) protocol, which only affects the data portion of a Macro PDF symbol transmission. The Control Header, if enabled, is always sent with GLI formatting.	None

Note: When printing barcodes, keep each Macro PDF sequence separate, as each has a unique identifier. Do not mix barcodes from several Macro PDF sequences, even if they encode the same data. When you scan Macro PDF sequences, scan the entire Macro PDF sequence without interruption!

CODE ID TABLE

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Code ID Options	Set 1	Set 2	Set 3	Set 4	Set 5
Codabar	F	N	X	N	F
Industrial 25	C	H	H	H	S
Interleaved 25	D	I	Z	I	S
Code 39	A	C	Y	M	A
Trioptic Code 39	A	C	Y	M	X
Code 93	I	L	L	L	G
Code 128	H	K	K	K	C
Italian Pharmacode	A	C	Y	M	A
MSI	V	V	D	P	M
EAN-8	P	B	B	FF	E
EAN-13	M	A	A	F	E
UPC-A	J	A	A	A	E
UPC-E	S	E	C	E	E
Code 11	K	J	J	D	H
Composite Code (CC-A/B, CC-C)	L	X	M	J	La
Composite TLC-39	O	Z	O	R	L2
US Postnet	h	a	s	i	X
US Planet	i	b	t	j	X
UK Postal	j	c	u	k	X
Japan Postal	k	d	v	l	X
Australian Postal	l	e	w	m	X
Dutch Postal	m	f	x	n	X
PDF417	a	O	W	T	L
MicroPDF417	b	P	V	U	L
Data Matrix	c	Q	U	V	d
Maxicode	d	R	T	W	U
QR Code	e	S	S	X	Q
Macro PDF417	p	i	a	q	L
Macro MicroPDF417	q	j	b	r	L

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Code ID Options	Set 1	Set 2	Set 3	Set 4	Set 5
Codabar	F	N	X	N	F
Industrial 25	C	H	H	H	S
Interleaved 25	D	I	Z	I	S
Matrix 25	E	G	G	G	S
Chinese 25	Q	M	P	S	X
Code 39	A	C	Y	M	A
Trioptic Code 39	A	C	Y	M	X
Code 93	I	L	L	L	G
Code 128	H	K	K	K	C
ISBT 128	H	K	K	K	C
Italian Pharmacode	A	C	Y	M	A
MSI	V	V	D	P	M
EAN-8	P	B	B	FF	E
EAN-13	M	A	A	F	E
UPC-A	J	A	A	A	E
UPC-E	S	E	C	E	E
Code 11	K	J	J	D	H
Composite Code (CC-A/B, CC-C)	L	X	M	J	La
Composite TLC-39	O	Z	O	R	L2
US Postnet	h	a	s	i	X
US Planet	i	b	t	j	X
UK Postal	j	c	u	k	X
Japan Postal	k	d	v	l	X
Australian Postal	l	e	w	m	X
Dutch Postal	m	f	x	n	X
USPS 4 CB / One Code / Intelligent Mail	n	g	y	o	X
UPU FICS Postal	o	h	z	p	X
PDF417	a	O	W	T	L
MicroPDF417	b	P	V	U	L
Data Matrix	c	Q	U	V	d
Maxicode	d	R	T	W	U
QR Code	e	S	S	X	Q
MicroQR	f	T	R	Y	Q

Aztec	g	U	Q	Z	z
IATA	z	z	r	h	S
Macro PDF417	p	i	a	q	L
Macro MicroPDF417	q	j	b	r	L